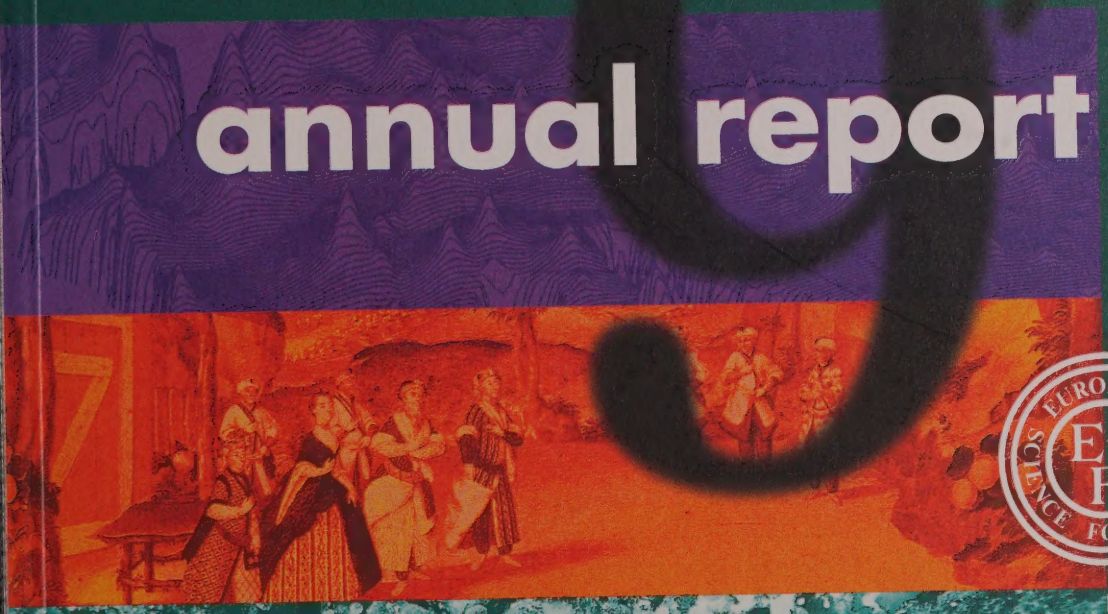
annual report 97



European Science Foundation

The European Science Foundation (ESF) acts as a catalyst for the development of science by bringing together leading scientists and funding agencies to debate, plan and implement pan-European scientific and science policy initiatives.

The ESF is the European association of more than 60 major national funding agencies devoted to basic scientific research in over 20 countries. It represents all scientific disciplines: physical and engineering sciences, life and environmental sciences, medical sciences, humanities and social sciences. The Foundation assists its Member Organisations in two main ways: by bringing scientists together in its scientific programmes, networks, exploratory workshops and European research conferences, to work on topics of common concern; and through the joint study of issues of strategic importance in European science policy.

It maintains close relations with other scientific institutions within and outside Europe. By its activities, the ESF adds value by cooperation and coordination across national frontiers and endeavours, offers expert scientific advice on strategic issues, and provides the European forum for fundamental science.

Contents

President's commentary

Sir Dai Rees

Capitalising on the ESF's strengths

This was an important and eventful year for the ESF, and something of a watershed. Several phases of activity drew towards conclusion and new sets of challenges began to emerge. This coincided with the approaching end of another chapter in the ESF's management, as Peter Fricker prepares to hand over the responsibilities of Secretary General to Enric Banda.

It had been clear even before Peter took office, that reforms were required if the ESF were to remain relevant to a changing Europe. Much of the need arose from new challenges to its Member Organisations. Their relationships with governments became more demanding, financial pressures increased, and societal needs and opinions came to impinge ever more directly on the practice of science. Peter's first responsibility was to complete the Strategic Reappraisal which, in 1993-1994, began to address these problems. This led to the strengthening of the Board and Standing Committee structures, reorganisation of the Office, revision of the Statute, and updating of the structure and mix of ESF activities. All change brings discomforts as well as any benefits and it is rare for every member of an organisation to be equally welcoming of all aspects of a new scene. Peter has had to carry the organisation along, making and remaking consensus, rather than simply running a going concern.

As we say farewell to Peter and thank him for managing a difficult period of transition, we can take satisfaction from the further new foundations laid in 1997. There is now more attention to science policy matters at the European level through the ESF's vigorous programme of workshops and other activities. The submission in 1996 of proposals for the content and management of the next Framework Programme was received favourably by the Commission and, judging from the match between our proposals and the final agreed programme, had significant constructive influence. There were considerable benefits to the ESF from this exercise in better mutual understanding and working relationships with the Commission.

Perhaps even more importantly for the ESF itself, our careful attention to understanding the Commission's duties in research as settled by Treaty, stimulated a rethink of the ESF's own specific and complementary role. Although so many things have changed since the early years of the ESF, the original arguments by the Founding Fathers continue to hold true and perhaps now with even greater force. They pointed out that progress in European culture, economy and society required more scientific

cooperation towards common ends, and that an instrument such as the ESF was needed to further this. They saw that if national research funding organisations failed to work together voluntarily and imaginatively, new structures for European science would be shaped by political momentum alone and perhaps not be best for science or for Europe. More than 20 years later, collaboration is more difficult especially when it costs money, and there is still much further to go. We need the discipline of a plan of action and the preparation of the *ESF Plan 1998-2001* was a major achievement of 1997.

The Plan was the product of much hard work by the Board and Standing Committees, often working together, and the administrations within Member Organisations which responded promptly and thoughtfully to drafts at various stages of development, leading up to the agreement at the Executive Council and General Assembly. The Plan aims to clarify the ESF's complementarity with other European bodies, to further improve the ESF's instruments for networking on science and science policy, and to agree an agenda of specific issues to be addressed. The challenges in science policy are to identify ways of improving mutual understanding between Science and Government and Science and Public Opinion, to develop relationships between science and socio-economic issues and make them more visible, and to improve administration and management for the health and quality of science. We are already making progress on such topics, especially by sharing insights and spreading best practice between Member Organisations.

The Science Agenda presents the most daunting and important challenges of all. Any scientific organisation must deliver good science if it is to have authority and be more than a talking shop. The ESF has a proud past record here on which we must continue to build. Although the Plan puts forward a number of main themes, the distinctiveness of the ESF is not in fact to be defined in relation to other bodies by dividing up science with them. We may all have interests in any branches of science, and our specificities lie in approach rather than area. The ESF's role is to improve the health and excellence of science rather than (as for the Commission) to utilise it. As the frontiers of science continue to expand faster than ever, the ESF will identify and develop new departures in scientific directions (called 'spearheads' in the Plan), and build new bridges between these and other disciplines including strategic and applied research. The Science Agenda is a first guess as to where these are most likely to be found. To move forward effectively as the Founding Fathers saw, the ESF and its Member Organisations will need to become more successful and streamlined in setting up, linking, and aligning complementary programmes in different countries. In the jargon of the ESF this means breathing more life into and making better use of *à la carte* schemes, and we hope to achieve this through a forthcoming review.

The ESF is fortunate that these ambitions are now to be entrusted to Enric Banda. He has already shown that he brings a fresh perspective and new ideas and as a former minister has seen science from the other side of the fence. We can have every confidence in the future of the ESF in his hands.

Sir Dai Rees, *President, ESF*

Secretary General's review

Peter Fricker

As Professor Peter Fricker nears the end of his term as Secretary General, he reflects on developments at the ESF over the last five years and the way forward.

One of the criticisms often levelled against fundamental research by people outside the scientific community is that it doesn't produce immediate tangible benefits for society. It is often viewed as a long-term, speculative activity. In the past scientists were able to weather these criticisms, in the knowledge that they had the necessary financial support at a national level to pursue their work. But over the last decade the situation has changed dramatically. Economic constraints, intensified by a deep and long-lasting recession, have put downward pressure on research budgets and the role of the European Union and its Commission in the R&TD field has been substantially increased. The old certainties have gone. In a very short space of time, fundamental researchers – used to thinking in the long term – have had to adapt to a harsher, more volatile environment where short-term considerations have risen to the fore, and where European cooperation is vital if the region's science is to remain internationally competitive.

At the time of my appointment as the ESF's Secretary General in 1993, these developments were coming to the boil, making it an extremely challenging period to take up the position. It could also be argued that the Foundation's time had come. The ESF's *raison d'être,* after all, is to act as a catalyst and coordinator of pan-European scientific activities, which was conveniently in tune with the new spirit of European cooperation. However, this was only partly true. The ESF is not an autonomous organisation operating in isolation. It is an expression of its Member Organisations' interests and priorities and, as such, the Foundation itself had to change to reflect their new circumstances. In particular, it needed to forge a new role that not only capitalised on the ESF's strengths but also complemented other bodies operating at a European level, such as Academia Europaea, All European Academies (ALLEA) and similar groupings, and, most notably, the European Commission and EuroHORCs. Cooperation, not competition, was the watchword.

Working closely with ESF's Member Organisations, one of my first major tasks, to which Sir Dai Rees has already referred in his President's Commentary, was to carry out a strategic review of the Foundation's mission in order to establish its future role. The conclusion was that the ESF should not only maintain its previous levels of scientific activities, but also more systematically integrate strategic considerations into its work. In the future, the Foundation should focus on five key activities: identifying trends;

forging research agendas; stimulating new lines of enquiry; enhancing research capacity; advising policy makers. The fact that the ESF has increased its membership base over the last five years, from 56 institutions to 62, with more organisations applying to join, and had a greater impact at a European policy level appears to suggest that this was the right course to take. There seems to be a growing consensus emerging that the Foundation, in accordance with its Member Organisations, has an increasingly important and specific role to play.

One noteworthy development, as mentioned by the President, has been the strengthening of the ESF's relationship with the European Commission. This has partly been achieved through more regular and systematic contact with the EC but also by concentrating on specific issues of mutual interest. As an independent organisation, the Foundation can provide valuable impartial advice, which is rooted in the knowledge and expertise of 62 major research funding institutions, spanning 21 European countries and all the scientific disciplines, including the social sciences and humanities. Thus the ESF can offer a holistic view. This has enabled the Foundation to provide fundamental science with a voice at the European level. It has pointed out to the EC and national authorities the importance of fundamental research in underpinning the research aimed at fulfilling the goals of increased European competitiveness and an improved quality of life of Europe's citizens. The ESF's inputs into the preparation of the next Framework Programme, the position paper *Beyond Framework Programme IV* and our subsequent follow-up actions, illustrate these efforts. Developed through extensive consultation with our Member Organisations, they appear to have influenced the intentions of the EC to incorporate a number of key underpinning fundamental science themes in the next Programme, including biomedical and social science aspects.

The ESF's advice has also become increasingly in demand from the broader scientific community. Over the last few years, we have been asked to assess the scientific case of several proposals involving medium- to large-scale research facilities. These range from proposals for a 100-Tesla laboratory and additional neutron scattering facilities, to a request in 1997 from the Austrian Ministry for Science endorsed by the country's ESF Member Organisations to evaluate the scientific cases of two competing proposals for new facilities, one a laboratory for crystal research and synthesis, the other a new neutron source. Requests like these are a measure of the ESF's enhanced credibility.

As an independent organisation, the ESF can provide valuable impartial advice, which is rooted in the knowledge and expertise of 62 major research funding institutions, spanning 21 European countries and all the scientific disciplines.

Although the ESF's advisory role, whether at a policy level or as a sounding board for new facilities, is vital, the Foundation's principal aim is to advance high-quality, pan-European research cooperation that breaks new ground. Our multidisciplinary capability, spanning all the scientific disciplines, and the breadth of our membership are key factors in our ability to pursue this objective. And in this connection, coordination of scientific efforts plays an important role. We might not have the financial resources to support full-scale pan-European research programmes but we can rely on

the infrastructure and collective expertise of our Member Organisations to spearhead pioneering scientific initiatives that other organisations can, and often do, subsequently take on and develop. In this context, a new procedure has been introduced: through exploratory workshops, leading scientists can assess whether an issue should be addressed on a longer-term basis and form new collaborative links. If an innovative idea is considered worth pursuing, it can be explored more thoroughly through the other ESF instruments, such as a European research conference, a network or a scientific programme or elsewhere. During 1997, some 20 exploratory workshops and more than 40 EURESCO conferences were held. The ESF also launched eight new networks and approved 12 new programmes with another two programme proposals being approved in early 1998.

All of these initiatives rely on 'networking' – bringing together leading scientists from around Europe to discuss face-to-face cutting-edge research issues. There is no substitute for these types of personal encounters, although electronic alternatives like the Internet have an increasing part to play. Over the last five years, the ESF has proved itself to be a particularly powerful coordinator of these 'meetings of minds'. In some cases, these have involved 'top-down' scientific issues, such as the joint EMRC/SCSS workshop on *Social Variations in Health Expectancy.* In many other instances, there has been a 'bottom-up' approach. Regardless of the driving force behind these initiatives, the ESF's guiding principle must remain scientific excellence in combination with European added value.

We have also leveraged our networking capability to help European scientists enhance their collective resources. The ESF's on-going development of a *Blueprint for a European Social Survey,* designed to unify and expand the huge wealth of national data on social attitudes across Europe, is a case in point.

The ESF Plan lays out agendas for science and science policy activities that will take the Foundation into the next century.

In a number of specific scientific and science policy areas, the Foundation has been casting its net much wider, establishing stronger links with international counterparts, such as the International Council of Scientific Unions (ICSU), and institutions outside Europe, such as the US National Science Foundation. In addition, the ESF has been looking at ways to improve the interface between fundamental research and its application. One issue, for example, is how the ESF's extensive portfolio of environmental programmes and data could be used to shed light on today's climatic development. In a similar vein, we have taken tentative steps towards forging closer ties with industry, for instance through a recent workshop on the role of venture capital in fundamental science. If fundamental science is to continue to advance, we need to establish dialogues like these with other sectors. This doesn't mean compromising our basic scientific values. Indeed, discussions like these can cement the long-term future of fundamental research: they give scientists the opportunity to explain the importance and value of their work, however speculative, and to learn new techniques and ideas from 'the other side of the fence.' Such an approach is mutually beneficial.

The Foundation has been equally committed to developing closer relationships with its Member Organisations – meeting their representatives

more regularly and systematically, and consulting with them more widely in order to better understand the scientific and policy priorities they want pursued at a European level. One of the recent outputs of this process, also referred to by the President in his commentary, is the new *ESF Plan 1998-2001*. Taking into account the changing science landscape at both the national and European level, including new public funding patterns, the Plan lays out agendas for science and science policy activities that will take the Foundation into the next century. Eight key scientific themes are identified in the document, ranging from 'atoms, molecules and complex systems' to 'resources and sustainability', from 'culture and European identity' to 'brains and cognitive sciences'. Like other recent ESF initiatives, these themes are designed to complement, not duplicate, work being carried out by other bodies. Their academic focus also underlines the Foundation's commitment to fundamental research.

The ESF should be viewed as an investment in science, not a cost.

So what is the way forward? From the ESF's perspective, which I believe is shared by its Member Organisations, the Foundation now has a better understanding of its role and 'specificity'. It is a body that can act as a catalyst for innovative scientific endeavours, which others can carry forward, and an organisation that can offer independent, strategic scientific advice. As in all organisations, though, there is room for improvement. For example, we need to look more closely at the governance of the ESF, including the roles of the Executive Council, the Board, and the Standing and Associated Committees. As our membership base expands – and this should be done prudently without diluting the quality – how will these roles be affected and have to change? In moving ahead, the Foundation should also build more bridges with scientific institutions outside Europe in order to obtain additional synergistic effects in the pursuit of its objectives.

One most important point to bear in mind is that the ESF – and complementary organisations like it – should be viewed as an investment in science, not a cost. I believe that the Foundation's achievements demonstrate that it can provide substantial returns, not just for its Member Organisations but also for fundamental science as a whole.

Although I still have several months to go before stepping down as Secretary General, I would like to take this opportunity to say how much I have enjoyed working for the ESF. I am confident that my successor, Enric Banda, will continue to strengthen the Foundation's relationships with its Member Organisations and build on the ESF's undoubted strengths. His combined knowledge of the scientific community and governmental processes will be most valuable to the Foundation and its Member Organisations. Finally, I should like to thank both past and present members of the Board and Executive Council, and, in particular, the two Presidents, Professor Umberto Columbo and Sir Dai Rees, with whom I have worked. And above all, my thanks go to all of my colleagues at the Strasbourg office for their valuable advice and hard work. I wish them well, along with Enric Banda as he takes over the reins.

Peter Fricker, *Secretary General, ESF*

Scientific insights

This section provides an insight into some of the work that the ESF supports. While it is necessarily selective and only represents a fraction of the Foundation's activities, it aims to give a flavour of the breadth of the ESF's activities and their significance for Europe as a whole.

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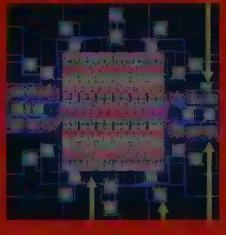
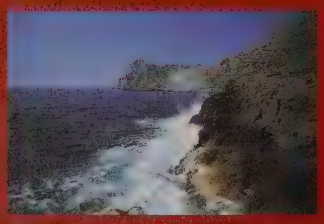
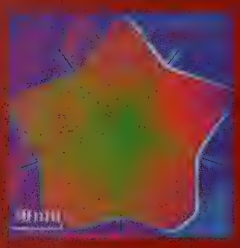
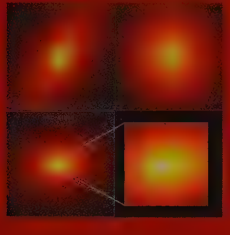








Spearheading new scientific advances

The Foundation's limited financial resources are carefully invested in scientific activities that will break new ground, enabling other funding bodies to build on the foundations of our work. One of the cornerstones of this strategy is our system of exploratory workshops. Drawing on the combined skills of leading European scientists these examine the scientific value of researching novel fields in greater detail either through one of the ESF's research tools – networks and programmes – or through another funding agency. As with all the Foundation's activities particular attention is paid to complementing, rather than duplicating, existing research at a European level.

Tackling the health divide

For centuries there have been significant differences in the lifespans and incidence of diseases between different sections of the population. However, despite substantial improvements in healthcare and per capita GDP, the gap between the health 'rich' and health 'poor' is widening in Europe.

Twenty-five years ago in Britain, for instance, men aged 20 to 64 who lived in the poorest environments were twice as likely to die prematurely as those living in the richest circumstances. Today, they are three times as likely to die early. Poorer sections of the population are also more likely to suffer from strokes, lung cancer, mental illness and other diseases than their wealthier counterparts.

"One way of unravelling the complex causes of health variations is to focus in on specific causes of death."

Similar examples can be found in every country in Europe. To make matters worse, there are health divides between countries and regions. North Europe, for instance, is markedly healthier than the South.

What's driving these health inequalities? And, more pertinently, how can we reverse them? These were just some of the questions addressed by an ESF exploratory workshop on *Social Variations in Health Expectancy* held in Düsseldorf, Germany, last October.

"Social inequalities in health, like other social phenomena, are very likely to be multi-causal: there is unlikely to be one explanation of the socio-economic differences in deaths in childhood, in adulthood, in old age," says Professor Hilary Graham at Lancaster University in the UK, one of the workshop organisers.

"One way of unravelling the complex causes is to focus in on specific causes of death, like coronary heart disease, and specific sets of influences, like the impact of disadvantage or the workplace, to tease out the range of factors involved."

The ESF workshop had three main objectives. First, to assess the current state of knowledge on social inequalities in Europe, based on particular causes of morbidity and mortality. Second, to evaluate the explanations of health differentials within and between countries. And, finally, to identify priority areas for

collaborative research at a European level.

In terms of the current state of knowledge, several issues were explored. Ari-Pekka Sihvonen from the University of Helsinki, for example, showed that there was a strong correlation between education and life expectancy both for men and women in Scandinavian countries, a difference that increased with age. Anton Kunst at the Erasmus University in Rotterdam, meanwhile, described how male mortality in 15 European countries, including central and eastern states, was related to socio-economic status regardless of whether occupational class, education, income or other measures were used. He also demonstrated that the underlying causes of death varied between the North and South. In northern Europe, apart from France, ischaemic heart disease is strongly linked to the socio-economic gradient while in most of southern Europe deaths from neoplasms are the main factor.

A wide range of explanations for these variations were put forward. For example, Chris Power from the Institute of Child Health in Britain discussed two models: the 'latency' model, that postulates that health differentials are determined by intra-uterine or perinatal conditions; and the 'pathways' model, which suggests that an adult's health is the product of the cumulative effects of their parents' and their own social conditions. This model takes the view that health at, say, the age of 33 can be predicted on the basis of 'social heritage factors', such as socio-economic position, the stressfulness of the psychosocial work environment and health behaviour, including smoking, drinking and other risk-related activities. Workshop co-organiser Professor Johannes Siegrist at the Heinrich-Heine-Universität in Düsseldorf also highlighted the connection between job insecurity and stress-related health problems.

Several avenues for future research were proposed at the workshop. The life course or 'pathways' perspective is one route, encompassing socio-economic, biological and psychosocial factors through childhood, adolescence and adulthood. The impact of chronically stressful social environments, notably in the work environment, is another option. A further route is to develop, using cross-national datasets, analyses of how the economic, cultural and policy environments of different countries influence health variations. In each of these three areas, multidisciplinary approaches - combining socio-economic, biological and psychosocial perspectives - are required.

"This is precisely the sort of issue that the ESF is ideally suited to tackle. With more than 60 Member Organisations in 21 countries, spanning all scientific disciplines, we have access to the resources and expertise needed to understand the causes of this health divide."

Professor Robert Erikson *Chairman of the Standing Committee for the Social Sciences*

"Research on social variations in health expectancy in Europe has reached a critical stage of cumulative descriptive evidence," the researchers noted in their final report on the workshop's proceedings. "The past 25 years of socio-epidemiologic research on this topic has provided basic tools, standardised methods, which can still be improved, and rich data sources for comparative analysis. In terms of data, concerted action at a European level has been successfully completed. In future we should concentrate on scientific explanations rather than on descriptive elaborations".

Photothèque Pluriel

Healthy beginnings

Research is now being directed at understanding how childhood and other life course influences affect health in adulthood.

The ESF intends to play an active role in these developments. Both the Standing Committee for the Social Sciences and the European Medical Research Councils Standing Committee have signalled their desire, in the Foundation's new Plan, to collaborate on promoting research into social variations in health as a scientific priority. "As this workshop has shown, health variations are a pan-European problem that transcend national and disciplinary boundaries," says SCSS Chairman Professor Robert Erikson. "This is precisely the sort of issue that the ESF is ideally suited to tackle. With more than 60 Member Organisations in 21 countries, spanning all scientific disciplines, we have access to the resources and expertise needed to understand the causes of this health divide."

Erikson's Committee is now taking the lead in developing plans for a new scientific programme that will mobilise the expertise necessary to tackle many of the issues raised at the workshop.

For a full listing of 1997 exploratory workshops see page 63.

Boundless mathematical possibilities

Mathematics has tended to be seen as an abstract science where the connections with everyday life seem fairly obscure, especially to outsiders.

However, an ESF scientific programme has underlined the importance of mathematics for a wide range of problems, from injection moulding and ice formation to managing investment portfolios.

The Foundation's five-year programme on the *Mathematical Treatment of Free Boundary Problems*, now completed, has been tackling many of the theoretical and numerical issues needed to overcome difficulties like these.

Free boundaries are curves or surfaces that separate two or more geometric regions, each with different properties that can change in size and shape over time. The most obvious example is ice. The location of the free boundary between water and the ice crystals that emerge from it is not known at the outset and this location changes as the ice forms. The free boundary 'problem' is that scientists require new non-linear mathematical techniques to cope with these discontinuities and singularities that can occur between the relevant interfaces.

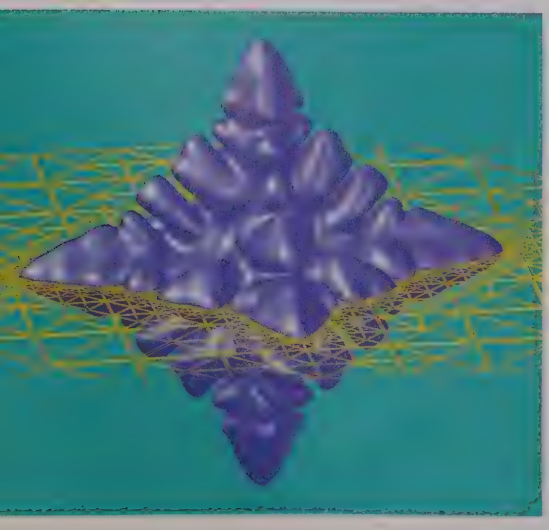
One of the many issues covered in the programme's 34 workshops was the numerical techniques needed to deal with flows of liquids that are of non-Newtonian type. This has particular relevance, for instance, to injection moulding using polymeric liquids, a process involving the insertion of liquid into very thin gaps, leading to non-linear elliptic boundary problems in moving domains. Another workshop focused on the singularities that arise at interfaces, cusps, cavitations and fractures, say, in material science.

The range of applications for mathematics in free boundary problems is enormous, says Jose Francisco Rodrigues, the programme's Chair. These include meandering rivers, the behaviour of elastoplastic materials, crystal growth and the formation of metal alloys. "Very often mathematical or numerical methods used in one question can be carried to a different subject which has no apparent physical relation," he says.

The ESF scientific programme has underlined the importance of mathematics for a wide range of problems, from injection moulding and ice formation to managing investment portfolios.

Although the programme made significant strides in the underlying theories and in their applications there is still a lot of work to do, says Rodrigues. Nevertheless the programme has created the momentum to move forward. There are also signs that the mathematics community as a whole is becoming more interested in this field, reflected in the recent decision of the Oxford University Press to establish a new journal dedicated to interfaces and free boundaries.

For programme details see page 49.



A. Schmidt, Freiburg

Crystal clear

Simulation of a three dimensional dendrite growing into an undercooled melt. A slice of the adapted tetrahedral finite element mesh is shown in yellow.

EPICA warms up

Plans to unlock further secrets about global climatic change took another step forward when the ESF's European Project for Ice Coring in Antarctica successfully installed the initial drill casing in the region's ice and started drilling last season.

The aim of the programme is to obtain a high resolution analysis of climate variations, of chemical changes and of gases trapped in layers of ice over time, especially greenhouse gases such as carbon dioxide, methane and nitrous oxide. Armed with this information, researchers will be in a stronger position to understand and predict climatic changes. Similar work was carried out under the ESF's *Greenland Ice Core Project* but scientists do not know whether the results from this study were local phenomena or indicated global changes. Antarctica will help them answer this question, amongst others.

The EPICA programme has so far attracted more than 20 million Ecu in funds from ESF Member Organisations and the European Commission.

EPICA has opted for its drill site for good scientific reasons. "This is the best place for long climatic records," explains the programme's chair, Jean Jouzel at the Laboratoire des Sciences du Climat et de l'Environnement, Gif-sur-Yvette, France. "The ice is thickest here, around three kilometres deep, and very stable. Our chosen site, *Dome Concordia*, is also, as its name suggests, a dome so the snow would have sunk down vertically before becoming ice. It also isn't

A. Pierre - IFRTP

above a lake so we will be able to hit bedrock."

The plan for Antarctica as a whole is to get three ice cores of more than 3,000 metres in depth in east Antarctica, (Vostok – completed this year, Dome Fuji – an ongoing Japanese programme, and Dome C), giving researchers a view of climatic change nearly 500,000 years ago. "In the second phase of EPICA, we plan to obtain in the Dronning Maud Land area very detailed data for the last 100,000 years, which was the last major climatic cycle."

"Many of our initiatives, like EPICA, have a substantial scientific impact. However, there is a very real concern that their future contribution could fall well short of their potential if sufficient funding is not forthcoming for ESF programmes and other scientific activities."

Professor Werner Rathmayer
Chairman of the Standing Committee for Life & Environmental Sciences

Polar push
Traverse convoy on its route to Dome C through the Antarctic continent.

So far a 120 metre hole has been created at Dome C and the casing for the drill put in place. In 1998, the team plans to drill down to a depth of 364 metres, equivalent to slightly less than 10,000 years ago. "This will enable us to find out whether the climatic stability over this period is an exception to the extreme changes that occurred over the last climatic cycles."

The EPICA programme, which is being coordinated by an ESF scientific steering committee at a cost of some 47,000 Ecu a year, has so far attracted more than 20 million Ecu in funds from ESF Member Organisations and the European Commission.

"Many of our initiatives, like EPICA, have a substantial scientific impact," says Professor Werner Rathmayer, Chairman of the Standing Committee for the Life and Environmental Sciences. "However, there is a very real concern that their future contribution could fall well short of their potential if sufficient funding is not forthcoming for ESF programmes and other scientific activities."

For programme details see page 45.

Primary cancer task

A new ESF network could help crack one of the world's most stubborn cancers.

Despite substantial progress in treating many cancers, survival rates for patients suffering from squamous cell carcinoma of the oral cavity (OrSCC), which is mainly caused by smoking, have barely changed over the last few decades. The main problem is that these people tend to develop additional primary malignant tumours in other parts of the aerodigestive track, often decades after the initial genetic lesion.

The Foundation's network on *Multiple Primary Tumours in Oral Cancer: aetiology and clinical significance* has been set up to get to the root of this problem. All of the current work in this area has been shaped by a 'field cancerisation hypothesis' formulated 35 years ago. According to this hypothesis, exposure of the oral mucosa to a carcinogen results in an irreversible change in the cells of the epithelium, thus inevitably leading to the formation of independent multiple primary tumours.

The network, which grew out of an exploratory workshop in 1996, intends to address the novel possibility that carcinogen induced changes in gene expression in stromal cells may also play a significant role in cancer development. Amongst its activities, the network will accordingly document the presence of aberrant stromal cells in apparently normal peri-tumour tissue and assess the prognostic significance of these cells in a coordinated retrospective study in which attention will also be given to defining carcinogen sensitivity by genotype analysis. In addition, researchers will investigate the effects of well-defined stromal fibroblasts on target epithelial cells in vitro.

For network details see page 56.

Risky business?

There is no scientific evidence that food produced from genetically modified organisms (GMOs) can harm humans but this hasn't stopped one leading European supermarket chain from refusing to stock these products.

Acutely aware of mounting public concern over GMOs, other shops are taking 'protective' measures too, usually through warnings on their labels. Pressure groups, such as Greenpeace, are also highlighting the potential dangers of genetic engineering. But is there genuine cause for concern? Or is this another public backlash against technology, fuelled by ignorance and fear?

The answer to both these questions is 'well, sort of'. Although current evidence indicates that it is safe to consume genetically engineered products, far less is known about the impact of GMOs on the environment, which could have a substantial impact on long-term food production. In some instances genes may flow from GM crop plants to wild species. In addition, genes have been introduced into plants to produce proteins that fool the plants that they have a virus, triggering an immune response to protect them against the real 'outdoor virus'. But could the synthetic protein coat be picked up by the real virus leading to a more powerful virus that could go on to destroy many other plants? Or could the genetically engineered toxin from the bacteria Bacillus thurigensis (BT), which is designed to kill off specific parasites in plants, affect non-target insects? And if it is widely deployed will insects build up resistance to it?

In 1997, an ESF exploratory workshop was held to help scientists answer these and other questions. "We wanted to inject good pure science in to the debate about the impact of genetically modified plants," says workshop Chair, Jeremy Sweet at the National Institute of Agricultural Botany in Cambridge. "Our aim wasn't to look at the ethical and political issues but to focus on the scientific risks. In particular we wanted to identify the crops that were being modified and those that presented potential hazards."

J. B. Sweet, Cambridge

Farming today *Genetically modified herbicide tolerant oilseed rape-pollinators flowering in a crop for hybrid seed production.*

Drawing on the skills of a wide range of disciplines, from plant ecologists and microbiologists to virologists, the workshop assessed the threats from both the crops that have been transformed and the introduced genes.

> **"We wanted to inject good pure science in to the debate about the impact of genetically modified plants."**

The researchers identified various types of plants that could have an effect in Europe. These included crops that were open-pollinating, perennial or had several wild relatives, which would increase the likelihood of colonisation and gene transfer to wild relatives. Crops that fall into these categories include oil seed rape and sugar beet. Maize is also open pollinating but is not generally adapted to the northern European climate and has no wild relatives. "Nevertheless," adds Sweet, "it is important not to make generalisations in Europe as the climatic conditions vary in different regions; these need to be taken into account."

And what sort of genes do we need to keep an eye on? "Those that confer resistance to pests, diseases and other stresses," he says. "These types of genes make plants better adapted to survive and thus are more likely to be integrated into wild species." The workshop prioritised the issues that require investigation and developed a strategy for further research.

For a full listing of 1997 exploratory workshops see page 63.

Signposts for Europe's deaf

Europe has one of the world's richest concentrations of sign languages for the deaf but little is known about how they originated, let alone how they are represented and coded visually. A new ESF network should resolve this problem.

The network, *Intersign: sign linguistics and data exchange,* has two main aims, says its Chair, Anne Baker at the Universiteit van Amsterdam. "The first step is to get together the researchers working in this area and establish a common basis for transcribing, analysing and storing the data in order to carry out comparative research. We also need to create channels for communicating our results within the research community. Once all this is done, we can look at the

acquisition, representation and grammatical structures of sign language."

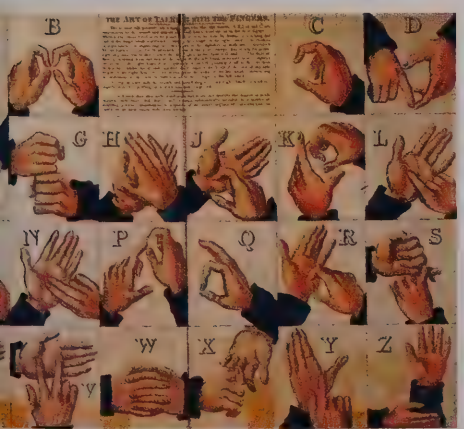
Spurred on by a recent European Commission recommendation that the region's sign languages should be officially recognised as minority languages, the network is ideally placed to make significant advances. Europe's estimated community of 2.5 million 'prelingual' deaf – the people who use sign – employ more than 25 different sign languages between them, providing a valuable environment for comparative research.

"Sign language has both similar and quite different principles underlying it, compared to the spoken language."

Contrary to popular opinion, sign is not based on a country's spoken language. American and British sign languages, for instance, are very different although they share certain features. Sign languages can also differ within a country, both in terms of their lexicon and grammar. In Northern Ireland, the Catholics use Irish sign while the Protestants rely on its British counterpart. There are also regional sign dialects within countries.

"Apart from its variety, one of the most fascinating aspects of sign language is that it has both similar and, at the same time, quite different principles underlying it, compared to the spoken language," says Baker. "By comparing spoken and sign languages we should gain important insights into how language conveys universal cognitive properties irrespective of the mode of communication."

For network details see page 59.



Hand signals
More than 25 different sign languages are in use in Europe.

Bacteria hold deep secrets

Bacteria buried deep in the ocean floor may well hold the secrets to more environmentally friendly fuels and even to the origins of life itself, according to John Parkes at the UK's University of Bristol.

Parkes was the chair of a joint ESF-EMaPS / EC-MAST exploratory workshop on *Exploring the Deep Sub-Seafloor Biosphere*, involving 38 scientists from around Europe spanning a variety of disciplines including geophysicists, molecular geneticists and microbiologists from both universities and oil companies.

Designed as a forum for discussing the latest developments in deep biosphere research, as well as future research priorities, the workshop underlined the huge scale and potential of the deep-sea biosphere. According to scientists at the meeting, the biomass below the sea floor might be greater than the amount on the Earth's surface. More significantly, findings from studies of sediments and rocks up to 750 metres below the sea floor indicate this material could provide a valuable source of new energy and the bacteria they contain used for waste treatment, along with other biotechnological applications.

Some bacteria, for instance, are producing large reservoirs of gases such as methane which form gas hydrates (methane ice) and which are estimated to contain twice as much carbon as traditional fossil fuels. Other bacteria may be intimately involved in the processes of fossil fuel formation as the sediment becomes heated during burial, a process previously thought to be due to purely non-biological reactions. "It appears these organisms are much more diverse and dynamic than previously thought," says Parkes. "For instance, we used to think they became inactive at around 50°C but this isn't the case. They are active up to at least 113°C, well into the oil window. Although the bacterial population decreases the deeper you go into the sub-sea floor - and the greater the pressure and temperature becomes - they nevertheless continue to catalyse chemical reactions and sometimes their activities increase in deeper layers. The pathways and rates of these processes are also very much quicker than their non-biological counterparts. Understanding these processes should provide new insights into oil and gas formation and lead to the isolation of new bacterial types with great biotechnological potential. The activity of these deep bacteria may also help us to unravel past climate change from the molecular fossils that remain in the sediment.

Biomass beneath the sea floor could provide a valuable source of new energy.

"The fact that they can also grow in deep, hot environments and in large numbers also indicates that life could have started deep in the ocean floor, surviving prehistoric bombardments, and moved on to the surface when conditions became more favourable. All these insights have changed our perceptions of life on Earth; it is not just restricted to a thin surface veneer, as previously thought."

To dig deeper into these issues, members of the workshop have drawn up a number of objectives for future research, including determining the extent, diversity and distribution of the deep biosphere in marine sediments, as well as the impact of bacterial populations on the geochemistry, mineralogy and isotopic composition of deep sediments.

For a full listing of 1997 exploratory workshops see page 63.

Bright sparks

Greater understanding of how natural intelligence is processed through neural networks and expressed in perception, cognition and behaviour could lead to enormous social and economic advances.

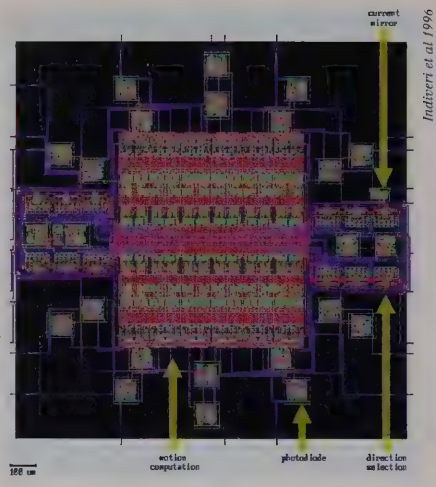
This was one of the main conclusions of an ESF workshop, planned in 1997 and held in early 1998, on *Computational Neurosciences*, prompting many of its participants to try to establish a research network to take this subject further at a European level.

The field offering the greatest potential for European scientists appears to lie in the understanding of computational processes at neuronal and network level.

Currently, neurobiologists and computer scientists are pursuing three broad avenues of research in this field. One of these is the creation of huge databases on brain lesions and other abnormal developments, such as speech defects, in order to decode and map out neuro-anatomical data. The US has already made considerable progress here and it was agreed at the workshop that European researchers should cooperate with their American counterparts, rather than compete. A further area of study is the development of new technologies based on neural networks.

However the workshop found that the field offering the greatest potential for European scientists appears to lie in the understanding of computational processes at neuronal and network level, and their expression in perception and cognition. Europe has strong scientific foundations here but researchers are scattered across the continent and rarely communicate. Cooperation between clinicians and the theoreticians who use mathematical and computational techniques to model the processes is particularly weak. One of the aims of the proposed research network is to match Europe's experimental strengths with its theoretical expertise, especially the theoretical skills that abound in eastern Europe.

For a full listing of 1997 exploratory workshops see page 63.



Indiveri et al 1996

Sensing trouble

Layout of an analog VLSI chip for the determination of time to contact or 'looming'.

Fulfilling fullerenes' promise

Ideas from an ESF conference on a revolutionary new form of carbon will keep researchers busy across Europe for the next four years under the EU's Training and Mobility of Researchers (TMR) scheme.

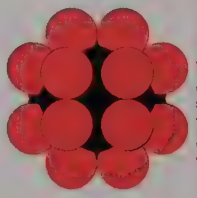
Until recently there were only two known forms of carbon, both naturally occurring: graphite and diamonds. However, scientists from the USA and Britain have created a third synthetic variety, called fullerenes, winning Robert Curl, Sir Harold Kroto and Richard Smalley the Nobel Prize for Chemistry in 1996. Effectively cages of carbon atoms (usually 60), fullerenes have opened up extraordinary new possibilities for research, according to Dr John Sandall at the UK's University of Exeter. "Their chemistry is fascinating. They have extremely interesting non-linear optical and biological properties, amongst other features," he says.

"The meeting catalysed contact, integration and scientific exchange."

Sandall was one of the researchers attending a European Research Conference on *Fullerenes in Context*, co-funded by the ESF and EC. The conference not only brought together leading European scientists exploring the possibilities of this new form of carbon but also helped groups of researchers, from over 10 universities, to formulate novel ideas which now are to be investigated using further funding from the EC's TMR scheme. In addition, the event attracted more than 50 young researchers in this field, giving them the opportunity to forge new links and learn from senior players in this growth area.

"The meeting catalysed contact, integration and scientific exchange," says the conference's chairman, Patrick Fowler, also from the University of Exeter. "Specific benefits included lively exchanges on reproducibility, scale-up and product purity between synthetic organic chemists and those trying to characterise their materials. The exposure of fullerene scientists to the neighbouring fields of catenanes, rotaxanes and the full panoply of supramolecular chemistry was equally rewarding."

For a full listing of 1997 European Research Conferences, see page 65.



J. Sandall, Southampton

Carbon loading

60-fullerene reacted with bromine atoms (coloured red). 24 bromine atoms add symmetrically to the fullerene.

Building bridges

For more than 20 years the ESF has been bringing together scientists from across Europe to apply their expertise and ideas to issues that have a pan-European dimension. In many of our initiatives a variety of scientific disciplines are involved, from the physical and medical sciences to the life and environmental sciences, social sciences and humanities. This enables us to address complex problems that transcend national and disciplinary boundaries and often stimulates new lines of thinking. Links with other representative scientific bodies outside Europe deepen these discussions further. Conscious of the significance of science to society as a whole, the Foundation is also developing stronger ties with policy makers, industry and other stakeholders.

Harmonising musical scholarship

Music has always played a central role in European societies but it has been particularly influential over the last three centuries, shaping national identities and creating new ways to communicate ideas and information. Now it is to become the focus of a new ESF programme.

"Music enjoyed a special place in European cultural life between 1600 and 1900," explains Dr Christian Meyer, the programme's co-chairman. "It pervaded a vast spectrum of human activity, from the formal rituals of church, court and state to the spontaneity of fair theatres. We saw the emergence of the Italianate symphonic Mass, solemn organ chorale and countless other musical genre, performed in a wide range venues, from public concerts to noble academies and private salons.

"Apart from its social functions, music during this period was invested with the concepts and symbols that helped define social identities. Underpinning all this was a complex institutional and technical organisation that closely mirrored society."

The ESF's programme on *Musical Life in Europe 1600-1900*, will investigate many of these issues and, more crucially, unite leading scholars from a variety of backgrounds. Until now, researchers in this field have tended to operate in isolation, focusing on national rather than European lines of enquiry.

The programme, which runs from 1998 to 2001, is built around three broad themes. First, the extensive migration of musicians and the circulation of music throughout Europe during this period. Second, the concept, character and functioning of European musical institutions. And finally, the representational aspects associated with these and other facets of European musical life.

For programme details see page 52.

Musical life
Turkish scene of an opera at Esterháza.

Venturing into new territory

'Pre-seed' funding and entrepreneurial training are needed to help scientists in Europe realise the commercial potential of their research, according to participants at an ESF science policy workshop.

The workshop held in Bonn, Germany, in December, brought together representatives of the European Venture Capital Association with academic entrepreneurs and public sector science funders to look at the links between basic research and risk finance.

Although basic scientists have traditionally been wary of dipping their toes in business they are under growing pressure from their funding agencies to do this as governments increasingly demand evidence of 'economic value' from publicly funded research. Unfortunately, as the workshop revealed, European scientists have been relatively poor at exploiting the commercial potential of their work in comparison to their peers in North America.

> **"We have to educate researchers in how to develop a business plan."**

The workshop, *Towards a Partnership between Research and Risk Finance*, was chaired by Dr Reinder van Duinen of the Dutch research council (NWO) and focused on two areas of basic research that lend themselves to commercial development: information technology, including the creation of new algorithms for the next generation of software and hardware; and biotechnology.

Biotechnology provides the most glaring example of the gulf between US and European scientists. Despite the fact that Europe pioneered many of the initial breakthroughs in biotechnology, it is now massively outgunned by North America in terms of both the number of biotechnology companies and patents. In the biopharmaceutical industry, for instance, the US has around 850 companies, compared to about 300 in Europe, and 65% of the world's biotech patents, against Europe's 15%. And the gap is widening.

To some extent these differences are due to regulatory anomalies. Europe's regulatory environment tends to approve new biotech products far more slowly than its US equivalent, reducing the time a product is protected by a patent and, consequently, the return on investment, which deters venture capitalists and other bodies from injecting money into this industry. However there are a number of other important factors holding European science back, as Tony Mayer, Head of Strategy at the ESF, explains. "European venture capitalists may not be as adventurous as their American counterparts and only around 13% of their funds are directed to high technology risk financing," he says. "They prefer to fund relatively 'risk free' initiatives such as management buy-outs. This leaves European scientists with a funding gap between carrying out the research and starting up. They lack the pre-seed funds to take the first steps towards commercialisation. In the US, they overcome this problem by insisting that a certain proportion of public research grants is allocated to entrepreneurial activities. No such system exists in Europe but we need one.

"There are also cultural differences. The US is much more entrepreneurial as studies have consistently shown. Researchers there understand the mechanics of bringing products to market and there are closer links between academia and industry. What we have to do in Europe is educate researchers in how to develop a business plan, how the financial markets are structured and how to tap into them, amongst other issues, so that they can attract funding once they reach the start-up stage. Venture capital is only one form of risk finance and researchers need to be aware and use the most appropriate mechanisms. Equally, there is a case for educating financiers in how researchers operate. We have to develop closer relationships between the two parties, underpinned by pre-seed funding and training."

In the wake of the workshop, which brought together 65 participants, the Foundation plans to investigate some of these issues in greater depth and produce a European guide to help funding agencies and their scientific communities forge closer ties with the risk finance industry.

Searching for finance
Scientists need better access to 'pre-seed' funding if they are to realise the commercial potential of their research.

Coasting along to disaster

Europe is awash with different theories about how to manage the growing problems faced by the region's coastal areas but unless a more integrated multidisciplinary approach is adopted the situation will only get worse.

This was one of the conclusions of a European Research Conference (EURESCO) on *Coastal Management*, jointly funded by the ESF and the EC.

Over the last 20 years, many coastal areas in Europe have changed dramatically due to commercial developments and other socio-

economic pressures, including a 10-20% rise in population in these regions. The situation world-wide is even more alarming. The impact on coastal wetlands has been such that in just two decades half of these have disappeared or changed beyond recognition and these losses are expected to continue at 1% per year unless remedial action is taken.

"To date coastal management has been fragmented and driven by short-term interests, usually on the basis of practical experience and sometimes even without that," says the chair of the conference, Job Dronkers at the National Institute for Coastal and Marine Management in the Netherlands. "It's been reactive rather than proactive. What we need is a coherent long-term strategy rooted in scientific knowledge which is communicated to the people managing these natural resources.

"On one hand this means establishing stronger links between scientists and managers. But the first step is to achieve basic understanding of coastal development processes, embracing all the relevant scientific disciplines. This doesn't exist at the moment. Instead, each discipline has its own objects and scientific language, which is a barrier to inter-disciplinary communication. They are operating in vacuums. The natural sciences, for example, have made a lot of progress on coastal engineering, and, to a lesser degree, on ecology. However, these don't take into account the social and economic drivers.

"Part of the problem is that social scientists tend not to focus on such a specific field as coastal management. They also define the coastal system more broadly than natural scientists, taking into account institutional and cultural factors that extend beyond the physical boundaries of the coast. This broader definition makes sense."

"To date coastal management has been fragmented and driven by short-term interests."

The conference also highlighted the need to take into account feedback effects in coastal areas - how socio-economic developments affect the coast and vice-versa. For instance, the impact of environmental degradation on tourism and employment.

Dronkers admits there are limitations in creating models that can simulate and predict these types of feed-back responses. Nevertheless he believes there is an urgent need for an integrated multidisciplinary model for coastal management. "Models play a crucial role in trans-disciplinary research. Not by giving precise answers, nor by prescribing optimal decisions, nor by providing value-free information. They are vehicles for exchanging ideas and values in a common language so we can work together and understand the full complexity of the problem."

For a full listing of 1997 European Research Conferences see page 65.

Photothèque Pluriel

Heading for the rocks? *Researchers argue that a more integrated multidisciplinary approach is needed to protect Europe's coastal areas.*

Heart of the matter

Cloning new cardiovascular genes and their regulatory sequences could lead to more effective treatments for thrombosis and other heart-related diseases, claimed members of an ESF workshop.

The workshop on *Cardiovascular Specific Gene Expression* was mainly designed to look at the opportunities for translating findings from molecular and cellular biology into clinical practice. Normally this type of research is driven by a desire to examine basic biological questions, notably how gene expression patterns throw light on the function of genes. However, as members of the workshop pointed out, these studies could be taken further by directly manipulating the gene expression or function.

Peter Carmeliet from the University of Leuven in Belgium, for instance, explained how gene modification in mice could be used to dissect complex signalling networks and to analyse interactions between circulating mediators of thrombosis and the vascular wall. As Robert Kelly from the Pasteur institute in Paris added, genes that control functions of specific regions of the heart, such as d-HAND and CARP, have already been identified, providing markers for tracking processes underlying diseases.

Studies could be taken further by directly manipulating the gene expression or function.

Reported in the medical journal, *The Lancet*, the workshop concluded that there was significant potential for using mice to study how gene expression related to function in the heart and vasculature but this would only be realised if basic scientists and clinical cardiologists collaborated more fully.

For a full listing of 1997 exploratory workshops see page 63.

State Institute for War Documentation, Amsterdam

New occupations *Ukrainian, Tatar, and Cossack 'volunteers' are issued with new boots (German propaganda photograph, July 1942).*

Reexamining the Nazi occupation of Europe

There has been an understandable reticence to re-open the scars of the Nazi occupation of Europe, especially as European unification gathers pace propelled by the Maastricht Treaty, European Monetary Union and other socio-economic developments in the region. Nevertheless, an ESF network on *National Socialist Occupation Policy* – chaired by a German historian – has broken down these barriers and shed new light on one of the most pivotal periods in the history of 20th century Europe.

"When you're dealing with such a sensitive and emotive subject, which affected so many people across Europe, it is essential to approach it as objectively as possible," says Wim Blockmans, Chairman of the Standing Committee for the Humanities. "As an independent body, the ESF has been able to provide the necessary impartiality and draw together researchers from across Europe. The spirit of cooperation and mutual understanding within the research team was extremely encouraging."

The network neatly encapsulates two key strengths of the ESF. First, the Foundation's ability to take an independent view of a subject that has historically aroused strong and often diametrically opposed national views.

And second, its pioneering role in drawing together and synthesising disparate sources of information in order to create a coherent pan-European picture.

"The ultimate goal of this network was to promote a more international perspective of research into the National Socialist occupation of Europe which, to date, has been predominantly national in character," said Wolfgang Benz, chairman of the network and Professor of the Technical University, Berlin. "This is important for two reasons. The collective memory of the World War II serves as a historical and political warning to future generations against dictatorship, the dangers of massive social acceptance of discrimination and the possibilities of mass murder. Secondly, this memory is central to the historical and moral beliefs that link people in Europe. If there is such a thing as a common European identity, it is imbued with a collective memory of dictatorship, occupation, economic plunder and human exploitation and extermination, amongst other atrocities."

"When you're dealing with such a sensitive and emotive subject, which affected so many people across Europe, it is essential to approach it as objectively as possible. As an independent body, the ESF has been able to provide the necessary impartiality and draw together researchers from across Europe. The spirit of cooperation and mutual understanding within the research team was extremely encouraging."

Professor Wim Blockmans *Chairman of the Standing Committee for the Humanities*

The main aim of the network was to look at five issues surrounding Nazi occupation: bureaucratic annexation and control; economic and financial exploitation; racial policy and persecution of the Jews; public sphere and culture; and forms of reaction and resistance to the acceptance of power. On a more pragmatic level, the network was primarily designed to bring together researchers from across Europe to exchange information and ideas at a time when new data sources were being opened up to academics. "We needed to broaden the perspective, notably by involving researchers from former occupied countries, in order to get out of seeing things from a national point of view, which has been the tradition of historiography since the 19th century," said Dr Johannes Houwink ten Cate at the Netherlands State Institute for War Documentation, one of the scientific secretaries of the network.

"We also suddenly had access to new archives in the Soviet Union and other eastern European states. Previously, we'd thought the main documents were in a central archive in Moscow, but it turned out that there were millions of other documents spread throughout the former Soviet Union. These dramatically changed our perspective of Nazi occupation. On the basis of these we had to start afresh, as if we were living in 1945 not 1997."

One of the most striking findings was the diversity of 'occupation models' applied by the Nazis. In reality, the Third Reich had no rules for occupation. "As the Germans admitted at the time, they didn't have any colonial experience they could draw on, unlike the British. They tried to adapt to local circumstances and made all the mistakes you would expect from 'beginners'. Their excessively harsh treatment of people in eastern Europe, for instance, ultimately backfired."

To the Germans' surprise, though, the resident populations were willing accomplices in considerable numbers, a convenient development given that the Germans did not have the human resources to cover newly-conquered territories, such as the Baltic states and countries like Czechoslovakia and Hungary. "In effect, the Germans persuaded the locals to occupy themselves."

"If there is such a thing as a common European identity, it is imbued with a collective memory of dictatorship."

There were several reasons for this. In certain parts of eastern Europe it was a backlash against Bolshevism, a rebellious streak that cost untold lives when the Soviets reclaimed their territories. The most compelling explanation, though, was survival and self-interest.

"It was possible to live through the occupation with relative ease while further down the road you could face huge difficulties. It was a lottery where your lives were generally out of your control," said ten Cate. "But if you collaborated, you got food, safety and a way of moving up in the world. It was an intelligent short-term strategy.

"One of the interesting features of the network was that it revealed how little we know about so many aspects of German occupation. For instance, we know almost nothing about the black market or food."

The most immediate output of all these discussions was a collection of nine publications dealing with the National Socialist occupation of Europe. These include books on the persecution of the Jews and two volumes covering new sources of information that have recently been unearthed, notably in Russia and other central and eastern European countries.

For network details see page 60.

Evolving new approaches to medicine

The race to stop the spread of HIV and other medical problems that are moving rapidly up the public health agenda, such as drug-resistant tuberculosis, has been hampered by a feature of life that is as old as Adam and Eve.

Evolution. As soon as researchers think they've made a breakthrough, the pathogens have a nasty habit of mutating into something else, often more powerful. An ESF scientific programme has been helping medical scientists get to grips with difficulties like these.

The Foundation's five-year programme on *Population Biology*, which finishes in 1998, was set up to stimulate and integrate an evolutionary approach to ecology and genetics across Europe. One of the products of its workshops in 1997, which ranged from social evolution in vertebrates and invertebrates to an analysis of the evolutionary dynamics and applications of microsatellites, was a new book on *Evolution in Health and Disease*, published by Oxford University Press.

"We tried to cover all the areas of human biology where evolutionary theory has something new and useful to say."

"We tried to cover all the areas of human biology where evolutionary theory has something new and useful to say," says Steve Stearns from the Zoology Institute at the University of Basel in Switzerland, the book's editor and Chair of the workshop on this subject. "If you look at the genetic make-ups of different types of people, you find that drugs have different effects on people with different genotypes. For degenerative diseases, you can study the constellation of genes and see who will be affected by these diseases and who won't and take appropriate action.

"By the same token, research into medical practices provides insights into the evolution of antibiotic resistance. In Ho Chi Minh City you can openly buy sachets of antibiotics without any prescription. This inevitably contributes to resistance, a problem that could be overcome by more informed health policies. Evolutionary theory can also provide the medical community with a deeper understanding of the development of immune systems. For example, if people with similar immune genes marry they will have children with a weak immune system.

"By presenting medical scientists with the full range of human diversity and pathogen diversity, and how they interact with each other in evolution, we hope they will have a clearer view of how diseases progress and be in a stronger position to take suitable measures."

For programme details see page 46.

Flying in the face of accepted wisdom

Researchers in an ESF programme have had their heads in the clouds for nearly two years but they've now come down to Earth with some intriguing findings.

Over the last 24 months members of the ESF's *Airborne Polar Experiment* have been measuring the composition of polar stratospheric clouds (PSCs) above the Arctic using a former Soviet spy plane capable of reaching heights of up to 21 kilometres. One of the main aims of the study was to investigate the chemical reactions in these clouds to forecast ozone holes and their positioning.

The study unearthed a new form of PSC, shedding new light on the mechanisms of cloud formation.

Although the flight data is only just being analysed, preliminary results indicate a number of surprises. For example, the researchers found that background stratospheric aerosols, which are layered between the tropopause and a maximum of 25-28 km altitude, were at the time of the Arctic campaign, lower, both at mid latitudes and at polar latitudes, than the loading prior to the Pinatubo eruption of 1991, contradicting the theory that human activities have led to an increase in aerosol. This is good news for the environment - aerosol particles provide the nucleii on which PSCs form, when the temperature in the stratosphere reaches very low values. The PSCs' particles then provide surfaces for the chemical reactions that produce ozone-depleting substances.

The study also unearthed a new form of PSC, shedding new light on the mechanisms of cloud formation. More significantly, from the perspective of airlines and other organisations interested in meteorological developments, the programme has provided useful insights into mountain lee-way stratospheric clouds which 'bounce' air off the tops of mountains. These compress and expand the air, creating significant temperature changes which allow PSCs to form in situations where they wouldn't normally do so.

In 1999, the APE campaign will move its attention to the southern hemisphere with flights planned over the Antarctic between September and October. But before then an equatorial mission is planned, starting in February 1999 in the Seychelles, to investigate the role of the tropical lower-most part of the stratosphere in ozone chemistry, and the mechanisms of injection of minor constituents into the stratosphere.

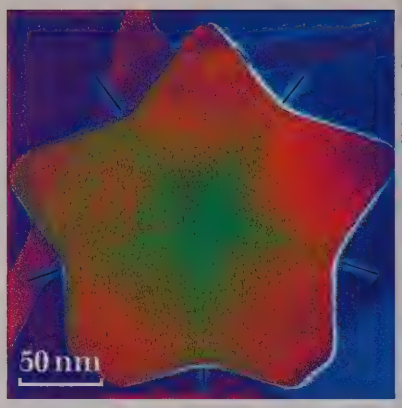
For programme details see page 44.

Tiny particles present massive opportunities

Research into nano-particle materials, composed of particles up to one thousand-millionths of a metre in size, promises to revolutionise science and technology.

If scientists can harvest the potential of these minuscule particles, we can look forward to molecular computer components, implanted biosensors and highly specific drug targeting systems, amongst countless other extraordinary applications.

An ESF scientific programme on vapour-phase synthesis and processing of nano-particle materials (NANO) has been helping this become a reality by bringing together leading members of the aerosol and materials sciences, as well as engineers, from across Europe. The main emphasis of the programme is on developing pioneering nano-structured materials for energy conversion and storage systems but its work has potentially much wider implications, as Heinz Fissan at the Gerhard-Mercator Universität Duisburg, Germany, the programme's co-chair alongside Joop Schoonman of the Delft University of Technology, explains: "As a result of our work, participants should be able to translate their scientific insights to many other applications such as erosion-resistant ceramics and magnetic and bioceramic materials."



University of Antwerp

Small is beautiful

A transmission electron microscope image of a nanostructured, multiply-twinned fullerene (C60) particle prepared using the aerosol flow reactor method.

Until recently scientists have concentrated on a special solution-processing route for creating nano-structured and nano-composite materials but this avenue is restricted, notably to oxidic materials. However, gas-borne or aerosol nano-sized particles – the focus of the programme – can be applied to virtually any material, creating enormous opportunities.

Drawing on the expertise of a wide variety of European scientists, NANO has a number of key scientific goals. These include generating the appropriate properties in the primary particles formed in the gas phase; providing theoretical models of the collection processes; determining the composition of nano-particle materials using a range of non-destructive micro-analytical techniques; and other fundamental research aims.

During the course of NANO, which started in 1995 and is scheduled to run until the year 2000, aerosol and materials scientists have been working towards these goals through workshops and other collaborative forums. Several workshops have covered ground-breaking developments in the 'nano' field, including the Differential Mobility Analyser and Electrostatic Spray Deposition (ESD), a technique that combines electrospraying of aerosols and thin layer formation. ESD has already been used to synthesise ceramic fuel cells and ceramic lithium ion batteries for storing PV electricity.

The emphasis of the programme is on developing pioneering nano-structured materials for energy conversion and storage systems.

To date, workshops and other NANO events have sparked off more than 30 new research collaborations. "This is astonishing because bringing two scientific disciplines together has a longer time scale than generating collaborative initiatives within a single discipline," says Fissan. Over 60 publications have also been produced. Looking further ahead, the programme is planning a joint symposium, together with the American National Science Foundation (NSF) in Edinburgh in September 1998, and hopes to attract more young scientists to its field through fellowships and similar mechanisms.

For programme details see page 50.

P.A. Mossey, Dundee

Orofacial clefting
A new study plans to investigate the causes of cleft lips and palates.

Facing up to the challenges of cleft palates

Europe is gearing up to play a significant role in a major research effort that could lead to a substantial reduction in the incidence of a major craniofacial defect in new-born babies.

The research is designed to find out whether a multivitamin supplement, including folic acid, can reduce the incidence of orofacial clefts, a problem that affects around one in every 650 children. More common than Down's Syndrome and neural-tube defects such as Spina Bifida, cleft lip and/or cleft palate are not just an aesthetic handicap for children, but also create serious feeding difficulties at birth, as well as speech problems as the palatal muscles are unable to function properly. There can also be allied hearing difficulties.

"The prevalence of orofacial clefting has remained remarkably stable within populations throughout the world indicating that the traditional focus on maternal nutrition as a possible cause is not providing us with the answers," says Dr Peter Mossey at the University of Dundee Dental School. "Research in to the mechanism behind neural-tube defects, which are also embryonic midline defects, suggests it is how nutrients are metabolised and absorbed that is the key. What we need to look at is the metabolic pathways, which are affected by genes. One of the enzymes that metabolises folic acid is of particular interest."

At a meeting in Emryville, San Francisco in 1997, it was agreed that these issues should be investigated further through case control studies in parallel or followed by a randomised controlled clinical trial. However, the USA alone would not be the best venue for a trial on the grounds that the country's food is already fortified with multivitamins and folic acid. Europe was considered to be an ideal site for a multi-centre collaborative study, partly because of its less consistent food fortification and also because of its diverse dietary differences as well as the geographic and cultural differences.

In October 1997, the first steps towards enabling this research were taken when an ESF-funded exploratory workshop on orofacial clefting was held to establish a strategy for developing the necessary study protocols. Chaired by Peter Mossey, the workshop, *Interaction of Genes and Maternal Nutrition in Orofacial Clefting*, brought together a wide variety of disciplines, from epidemiologists, orthodontists and biochemists to statisticians, cleft surgeons and obstetricians. "It was the kind of forum I've never been to before, with such a diverse range of different perspectives being focused on a single issue," he says. "There was a tremendous cross-fertilisation of ideas.

"Workshops like this are not only useful for spearheading new scientific fields but also for agreeing the scientific standards and frameworks for forthcoming networks and other activities."

Professor Leena Peltonen
Chair of the European Medical Research Councils Standing Committee

"If the studies and subsequent clinical trials prove successful, a similar approach examining nutrition and metabolic factors could provide the answer to other embryological problems, such as congenital heart problems, urinary tract malformations and limb reduction defects as there might well be similarities in the mechanisms."

Professor Leena Peltonen, chair of the European Medical Research Councils Standing Committee, comments: "Workshops like this underline the broad potential of these events. They are not only useful for spearheading new scientific fields but also for agreeing the scientific standards and frameworks for forthcoming networks and other activities."

An ESF network on this topic is now expected to be launched in 1998.

For a full listing of 1997 exploratory workshops see page 63.

Optimising resources

Collectively, European countries boast a huge range of scientific resources, from research ships to large-scale neutron scattering facilities and national data archives. By creating an environment where these can shared the ESF can help realise economies of scale and ensure that the full scientific potential of these resources is maximised. In some cases this means negotiating greater access to facilities for scientists, in others it requires the development of common data protocols that enable national databases to be pooled and utilised for comparative pan-European studies. Increasingly, the Foundation is also being asked to use its status as an independent body to judge the scientific merit of creating new medium- to large-scale research facilities, at a national and European level.

GIS' European advance

As national boundaries in Europe become increasingly blurred, the need to integrate the data from the region's different geographic information systems (GIS) into a seamless whole is growing.

Emergency services, the travel industry and countless other bodies that operate on a pan-European basis will depend on this. Unfortunately, for years, the region's community of GIS specialists have tended to work in national isolation, developing different data protocols from other countries, hindering the scope for creating an integrated approach.

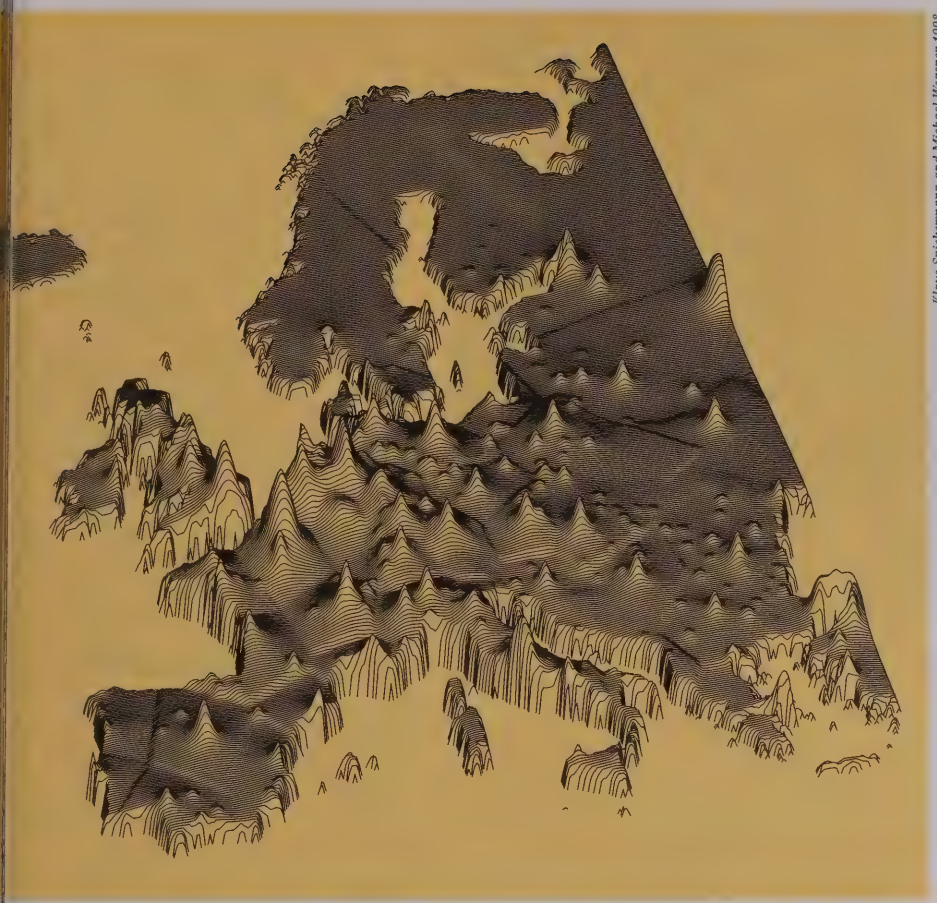
An ESF scientific programme has helped break down these barriers and enabled researchers and public and private organisations to exploit the collective potential of Europe's GIS resources.

Recently completed after a four-year term, one of the main aims of the Foundation's GISDATA programme *(Geographical Information Systems - Data Integration and Database Design)* was to promote collaboration between European researchers operating in this field in order to enhance national research efforts. The programme has also had, from its design stage, an international dimension through collaboration with the American NSF's National Centres for Geographic Information Analysis (NCGIA).

A glance at some of the headline statistics from the programme reveals how successful it has been in achieving this central goal. Since it was launched in 1993, GISDATA has brought together more than 300 scientists from 20 European countries; published a series of volumes with Taylor and Francis; circulated over 1,000 copies of a regular newsletter in 35 countries; and established a database on the Web containing details of more than 700 scientists active in this field together with abstracts from the programme's 12 specialist meetings. From a long-term perspective, GISDATA has been particularly successful in forging links between young researchers, who hold the key to the future of GIS.

GISDATA has been particularly successful in forging links between young researchers.

"Almost 40% of the researchers were at an early stage of their careers and spanned an impressive array of disciplines," says Max Craglia at the UK's Sheffield University, scientific coordinator of the programme. "These ranged from information law to pure computer science and included applied fields such as urban and regional planning which have obvious benefits in terms of improved integration and exploitation of GIS data."



Klaus Spiekermann and Michael Wegener 1998

Rail map

GIS accessibility surface of Europe: accessibility by rail, 1993.

The driving force behind these achievements was a series of 12 specialist meetings divided equally between three broad research themes: geographic databases; geographic data integration; and socio-economic and environmental applications, and two joint ESF/NSF summer institutes held in Maine (US) and Berlin (Germany) in 1995 and 1996 respectively. The geographic data meetings covered issues such as data quality, how to provide multiple views of geographic data at various scales and levels of resolution, and how to overcome the problem of dealing with real geographic phenomena that cannot easily be forced into one of two current standard data models. The workshops on data integration meanwhile dealt with an equally broad spectrum of issues. These ranged from legal and institutional hurdles, to the application of new remote sensing technologies. Researchers also participated in the GI2000 initiative of the European Commission's DGXIII, designed to establish a common policy framework for geographic information in Europe.

In addition, four meetings addressed the socio-economic and environmental applications of GIS, such as its use in epidemiology and emergency planning as well as its potential in multimedia and the need for new forms of exploratory spatial data analysis to deal with large-scale initiatives.

Lack of understanding of how valuable GIS data is to Europe.

The programme's final plenary conference, held near the ESF's headquarters in Strasbourg in September 1997, included discussions with a number of European parliamentarians and policy advisers. Conference participants called for GI research to be given a higher profile within the EC's plans for the Fifth Framework Programme, warning that failure to do so could compromise the effectiveness of a significant part of the European Union's future R&D activities.

"It's important to realise," adds Craglia, "that for all its achievements GISDATA has only laid the foundations for creating an integrated and highly accessible pan-European GIS network. Many issues remain unresolved including intellectual property rights, pricing strategies and policies for granting access to this type of data. However, attempts to iron out these questions are being undermined by a lack of understanding of how valuable GIS data is to Europe. The ESF programme has made considerable progress in addressing this problem but there is still some way to go."

For programme details see page 53.

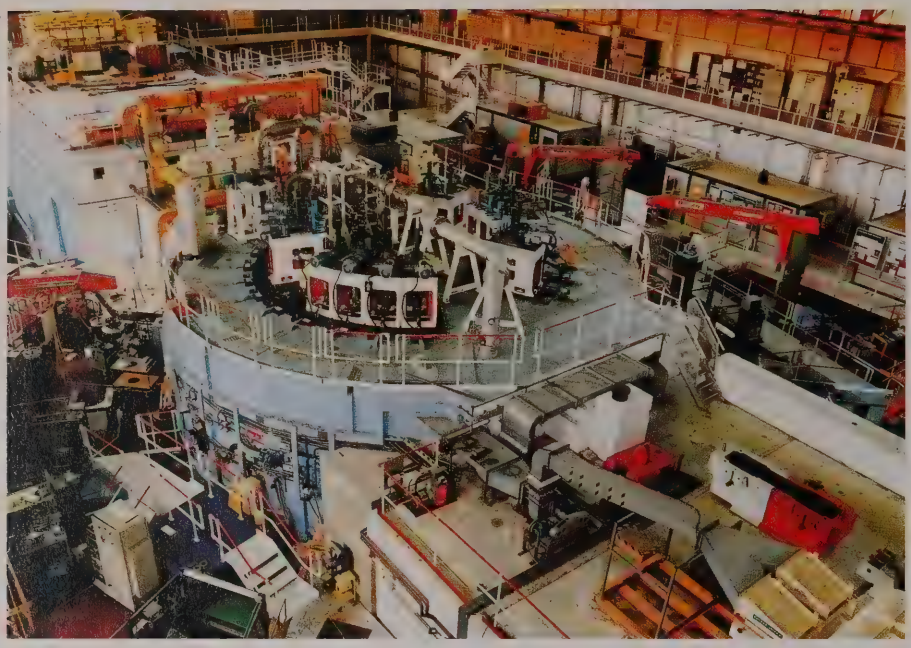
Mouse trap

Two new databases on mouse gene expression are just some of the benefits of a recently completed ESF network.

Five years ago, when the *Databases of Gene Expression during Mammalian Development* network began, Europe's developmental biology databases were relatively immature and highly fragmented. Since then scientists from eight European countries have been collaborating through the network to create central databases on mouse developmental anatomy and tooth development. The network's results have now been published in a special issue of *Cell Developmental Biology*.

For network details see page 56.

ISIS Rutherford Appleton Laboratory



Model facility

ISIS at the Rutherford Appleton Laboratory has set the standard for pulsed spallation neutron sources such as AUSTRON.

Verdicts on proposed Austrian facilities

Plans to build a medium-scale pulsed neutron source in Austria received a favourable assessment from an independent panel of experts brought together by the ESF, but the group expressed a number of reservations.

Invited by the Austrian Ministry of Science, and Austrian Member Organisations of ESF, to comment on the proposal's scientific merits from a pan-European perspective, the panel, chaired by Dr Reinder van Duinen of the Dutch national research council (NWO), recognised that there was a "window of opportunity" for creating a facility like this, especially given the forecast 'neutron drought' in Europe. However, they had doubts about the costing of the proposal and whether its scientific-strategic positioning had been fully thought through. If these issues could be resolved, they wrote in their report, "the facility should move forward quickly."

ISIS Rutherford Appleton Laboratory

Neutron manufacturing

The spallation process.

The panel, made up of leading scientists across Europe, was less enthusiastic about plans to create a transnational central laboratory for crystal research and synthesis in the Austrian region. The main criticism was that the concepts, techniques and uses of crystalline materials that would be employed at the facility were too specialised and disparate. "No convincing value added would be achieved by massing crystal R&TD together under such a central unitary structure and at such a high cost," claimed the final report. Nevertheless, the panel believed there could be a promising future for a 'distributed' laboratory that brought together existing expert groups in crystal R&TD.

Following the report's publication, the Austrian Minister for Science, Dr Caspar Einem, backed the panel's recommendations, offering to meet one-third of the costs of developing a new pulsed neutron source.

Commenting on the report, Jens-Erik Fenstad, Chairman of the ESF Standing Committee for Physical and Engineering Sciences (PESC) says: "This is just one example of the Foundation's ability to use its independence to provide an objective analysis of scientific issues and policies. Our aim is to complement, not compete with, advice offered by other European organisations such as the EC. In fact, we have an EC representative as a standing observer on PESC. And to ensure our Member Organisations' scientific and strategic views and priorities are taken into account, we are introducing regular meetings between PESC and Members' senior administrators."

"This is just one example of the Foundation's ability to use its independence to provide an objective analysis of scientific issues and policies. Our aim is to complement, not compete with, advice offered by other European organisations."

Professor Jens-Erik Fenstad *Chairman of the Standing Committee for Physical & Engineering Sciences*

The ESF is expected to provide assessments of other European facilities in the near future, including a full assessment of the projected European Neutron Spallation Source, reinforcing its capability to provide independent advice on existing or projected research facilities.

On shaky ground

California might be one of the most high profile locations for earthquakes but it's a long way behind Europe.

After China, Europe scores the highest number of casualties from tremors. In Italy alone around 100,000 people are killed each century from earthquakes, while Greece, Bulgaria and Turkey have experienced earthquakes that register over eight on the Richter Scale.

There is a pressing need to combine the skills of seismologists, social scientists and civil engineers, to establish risk scenarios for several European cities.

Although most of our tremors tend to be fairly tame, it is not the ferocity of earthquakes that we need to worry about, it is the characteristics of the regions that are hit by these seismic events that count. Even the most innocuous seismic shift can have catastrophic physical and economic effects if it strikes a highly populated region, such as a built-up city. And Europe has a number of cities that fall in to this category.

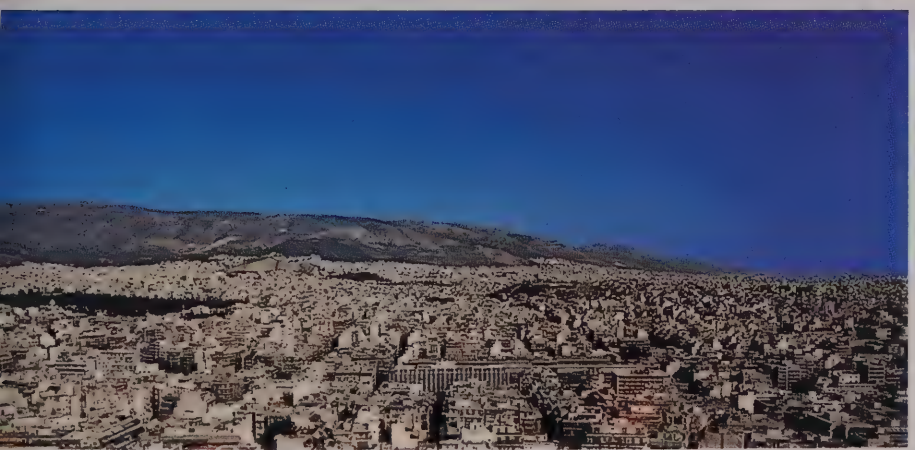
Historically, the worst earthquakes in Europe, both in terms of their scale and impact, have occurred around the Mediterranean. However, areas of central and northern Europe are now facing increasingly high risks not because there has been a major change in seismic activity but because they are becoming increasingly populated and industrialised. The potential economic and human costs are rising every year.

But which European cities are most vulnerable? And what would be the social and economic costs if an earthquake struck one of them? The answers to these and other questions are needed to mitigate these risks, for instance through planning regulations for buildings, and for planning emergency strategies if the unthinkable actually happens.

The areas in Europe most likely to be affected by earthquakes are fairly well known. These range from cities with high population densities, such as Athens and Lisbon, to conurbations with vulnerable buildings and infrastructures, including Split, Dubrovnik and Sofia. Highly industrialised regions such as Rhinegraben and the Po plain, also enter the equation. Nevertheless, relatively little work has been done at a European level on the potential social and economic losses of earthquakes in areas like these. Although studies have been carried out in the USA, the results of these are difficult to apply to Europe because of its unique built environment, especially its ancient buildings.

An ESF exploratory workshop on *Earthquakes and Megacities* brought together scientists from a range of different disciplines to discuss these and related problems. The workshop concluded that there is a pressing need to combine the skills of seismologists, social scientists and civil engineers, to establish risk scenarios for several European cities. These could be based on documented knowledge of the seismic hazards and the vulnerability of the built environment with both theoretical and computational techniques playing a central role.

For a full listing of 1997 exploratory workshops see page 63.



Achilles heel

Densely populated Athens lies in one of Europe's more earthquake-prone areas.

Photothèque Pluriel

Climatic change and Europe's apes

Hominoid primates first spread from Africa to Europe some 15 million years ago.

Until about 10 million years ago western and central Europe were covered in lush sub-tropical forests and a wide variety of apes could be found there. But in a relatively short period of time all the apes vanished, along with more than half of the mammal fauna, and the forests changed to their present distribution of Mediterranean and temperate woodlands. The driving force behind this dramatic change has been the subject of debate for years but an ESF network on *Hominoid Evolution and Environmental Change in the Neogene Europe* appears to have identified the prime cause.

The network found that the change in Europe's mammalian fauna was most probably caused by increased seasonality, possibly a prolonged dry season. "Few forest mammals can cope with a really dry season," says Mikael Fortelius at the Finnish Division of Geology and Palaeontology, scientific secretary of the network. "In eastern Europe the change took a long time, in the west it came quickly and had a disastrous effect on the ecosystems", he adds.

The network arrived at this conclusion after examining the collective data from researchers across Europe, including data on coral reefs and other fauna which are highly sensitive to climatic change. Although these data have existed for decades they have not been brought together before. "By collaborating with other scientists from 11 countries, we were able to put together the pieces of the puzzle," explains Fortelius.

One possible reason for the increased seasonality, says Peter Andrews, at London's Natural History Museum, is that Africa was drifting north, reducing the size of the ancient sea that is now just seen in the remnant Caspian and Black Seas and the Mediterranean. This altered the ocean flows around Europe, which play an important role in the region's climate.

To date, the network has focused on fauna and fossil records to understand why Europe's apes vanished. The next step is to look more closely at the development of apes and how this was shaped by climatic change.

For network details see page 57.

Mountains of data

A new ESF network could provide a fresh perspective on climatic change and help policy makers address the degradation of Europe's alpine regions.

The Foundation's network on *Alpine Biodiversity* will draw together Europe's scattered collection of databases and maps of higher plants, mammals and invertebrate groups to create the most comprehensive picture ever of the continent's alpine ecosystems.

Two recent developments have made this possible. First, the removal of political barriers in eastern Europe. And second, advances in new technology, notably the combined use of Global Positioning and Geographical Information Systems, which have enabled researchers to quickly build up maps showing the different levels of biodiversity across the whole of Europe's mountain ranges and also taking into account latitudinal variations.

There is growing evidence that alpine biodiversity is about to decline sharply.

The need for a network like this has never been greater. There is growing evidence that alpine biodiversity is about to decline sharply, largely due to human activities, including the growth in skiing, tourism and other developments. The implications of this are profound. Apart from the loss of plants and the scientific information these contain, alpine biodiversity is essential for minimising soil erosion and maintaining the stability of mountain slopes. The data collected in the network will also provide useful pointers to environmental changes: alpine ecosystems are highly sensitive to climatic change.

One of the first tasks of the three-year network will be to provide a pan-European estimate of the level of biodiversity. Particular attention will be paid to developing more accurate ways to monitor and measure this. There will also be workshops on the patterns and causes of alpine biodiversity and how these are affected by changes in temperature, hydrology, nutrients and other environmental variables and interactions.

For network details see page 57.

Georg Grabherr, Koinigstetten

On a cliff edge *There's a pressing need to record Europe's alpine biodiversity.*

Maintaining the health of science

Basic science is facing a number of important challenges which, if unaddressed, could undermine its undoubted contribution to knowledge and Europe's socio-economic progress. These include downward pressure on research funding and a tendency outside the scientific community to take a short-term view of basic research. To protect Europe's science base, the ESF acts as a voice for basic research in European policy circles, a role that was epitomised by our submission for the EC's next Framework Programme. The Foundation also maintains high scientific standards through the development of guidelines, training and strict scientific criteria for its own scientific activities. We also help nurture the next generation of researchers by involving young scientists in many of our conferences and activities.

In 'sync' with biologists

Concerns that the demand for synchrotron facilities could outstrip supply has prompted a major research council to ask the ESF to carry out a scientific assessment of this situation from the perspective of biological and biomedical research.

The UK's Medical Research Council asked the ESF to conduct the study in the light of evidence that there is likely to be a marked increase in demand for access to synchrotrons from European biologists. Synchrotron radiation facilities have traditionally provided for the research communities in chemistry and physics. Now the capability of synchrotron radiation (focused X-ray sources) to unravel details of biological material down to molecular and cell structures is increasingly being appreciated by the biological community. A new demand is being created and it is important that the user community and the suppliers of synchrotron facilities look together at what exists, how usage will expand and change and to consider the future.

The independent review will focus on current and future beamline provision and demand, as well as how this demand could be met more effectively in the years ahead. It will also look at the impact of future technical developments. Due to be carried out in the first half of 1998, a final report is expected to be published by the end of 1998.

Relative values

Chemistry's relativistic theory could be applied to a wide range of issues, according to a series of three European Research Conferences which have taken place within the framework of a five-year ESF scientific programme on this subject.

The theory could be used to shed further light on the 'heavy atom effect' in NMR, spin recoupling phenomena and magnetic materials. It could also be applied to materials featuring transition metals in order to define and predict their properties.

Framework follow-up

Making sure that the voice of Europe's scientific community is heard in the debate over the European Commission's plans for a Fifth Framework Programme has been high on the Foundation's science policy agenda for some time.

As the European association of national funding agencies, the ESF has to have concern about the development of European science as a whole, including the EC's own very significant R&TD activities. This was the reasoning behind the ESF's preparation of detailed advice on the scientific content of FPV, first published in 1996 as *Beyond Framework Programme IV*.

Specific advice in the fields of the social and biomedical sciences has now been consolidated with more general inputs.

Since then, the Foundation has followed closely the Commission's evolving plans. It has provided comments, both written and oral, on the Commission's working documents and proposals as they have emerged. These have ranged from discussions of general principles, through comments on programme management and coordination, to detailed analyses of scientific content.

Specific advice in the fields of the social and biomedical sciences has now been consolidated with more general inputs and published in two science policy briefings as *Further Considerations on the EC's Proposal for FPV* and *Social Science Research in the Fifth Framework Programme.*

Star wars II

The battle to protect radio-astronomy against the corrupting effects of telecommunications satellites moved into a new orbit when an ESF Associated Committee published the second edition of an influential handbook.

The Committee on Radio-astronomy Frequencies' (CRAF) new handbook sets out the case for preserving scientific access to certain parts of the radio spectrum. CRAF argues that radio emissions from satellites could drown out weaker cosmic signals, which scientists need to measure in order to understand the origins of galaxies and other interstellar developments.

Radio emissions from satellites could drown out weaker cosmic signals.

Aimed at both the telecommunications industry and the administrators who allocate radio bands, the handbook comes at a crucial moment. Recent concessions to the satellite industry could lead to unacceptable interference in two bands allocated to radioastronomy nearly 40 years ago. Scientists are particularly concerned about problems in the 1400-1427 MHz band, which contains the neutral hydrogen line.

This band, says the handbook, "has served astronomy as the most critical tracer of the spatial structure of the Milky Way galaxy as an indicator of both redshift and the potential for star formation in other galaxies."

CRAF

Battle site
Westerbork Synthesis Radio Telescope in the Netherlands.

New school of thought

Comparative research in economic sociology is set to move up a gear thanks to the Foundation's decision to launch an innovative three-year series of summer research institutes.

Each annual institute will bring together experienced and younger researchers to participate in research workshops and a research training summer school. The aim is to develop a pan-European network of doctoral researchers conducting comparative studies of changing institutions, economic systems and economic performance. This will build on the ESF's recently completed programme on *European Management and Organisations in Transition.*

The institutes will also help to integrate national PhD programmes and develop new methodologies for conducting systematic comparative social research in economic sociology across Europe.

For programme details see page 52.

Making the most of marine biodiversity

Marine organisms play a crucial role as a food source and as regulators of biogeochemical processes but remarkably little is known about their diversity relative to their terrestrial counterparts.

To fill these gaps in our knowledge, an essential step towards the sustainable management of marine resources, the ESF's European Boards for Marine and Polar Science have prepared *A European Science Action Plan on Marine Biodiversity.*

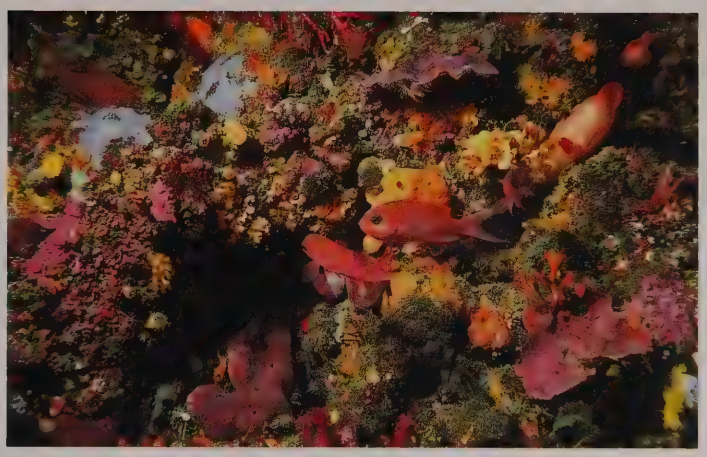
There is a need to provide a scientific rationale and tools for the proper management of living resources in Europe's seas.

The plan, which focuses purely on scientific issues, will be published in 1998 and is expected to set out four main objectives to safeguard these resources:

- Characterise marine biodiversity at a range of biological, spatial and temporal scales.
- Quantify the role of marine biodiversity in providing goods and services in both natural environments and those affected by human activities.
- Determine the probable effects of natural and man-made changes in biodiversity on ecosystem goods and services.
- Provide a scientific rationale and tools for the proper management of living resources in Europe's seas.

It is hoped that the publication of the plan, emphasising fundamental research needs, will help not only the scientific community but also the European Commission, as it defines its new Key Action on Marine Biodiversity within Framework Programme V.

Jean Lecomte / CNRS-O.O.Banyuls



Coral draw
More than 500 different species have been recorded living in and around this reef at Banyuls-sur-mer.

Cloning controls

The use of cloning technologies to create genetically identical human beings is prohibited under a new protocol drafted by the Council of Europe.

The protocol, which will be attached to the Council's *Convention on Human Rights and Biomedicine*, was drawn up following the cloning of the sheep 'Dolly' which prompted widespread concern that this technology might one day be applied to humans. The ESF's consultant on bioethics, Dr David Evered, a former member of the European Medical Research Councils Standing Committee, was involved in the formulation of the protocol.

Other ESF activities during the year included an exploratory workshop on *Bioethics*, convened by the Standing Committee for the Humanities and attended by independent experts and representatives of all the ESF's Standing Committees. In addition, a wide-ranging panel discussion tackled the same topic at the 1997 General Assembly. The debate focused on a number of high profile issues, principally related to genetics, at the interfaces between society, health and the environment, with a particular emphasis on risk regulation and protection and the public perception and understanding of science.

Peerless advice

How best to assess research in a changing science environment has become an important discussion topic in many national funding agencies.

As an association of more than 60 such agencies, the ESF is well placed to add a pan-European perspective and move forward the debate.

In late 1996, the ESF supported, and agreed to publish the findings of, a consensus conference on the *Theory and Practice of Research Assessment* held in Capri, Italy.

Now, a reference guide explaining how institutions across Europe can establish or sharpen their peer review systems is set to be launched by the Foundation's European Medical Research Councils (EMRC).

During 1997, the EMRC and four Member Organisations, as well as several university professors, were invited by the Czech Republic to hold a series of training workshops explaining how to structure and conduct peer reviews. They also advised on how to prepare grant applications. Drawing on the lessons from this exercise, the EMRC intends to produce peer review guidelines for other countries in central and eastern Europe. The guidelines should also provide useful pointers for young scientists in all European countries. It is expected to be published by the end of 1998.

Ocean Drilling Program

Drill ship
Rig workers on the ODP's JOIDES Resolution.

Charting a strategy for ocean drilling

Europe's strong position in deep-sea drilling was given a significant boost when the ESF's Boards for European Marine and Police Sciences (EMaPs) published a new position paper outlining a strategy for progressing the scientific and commercial exploration of the region's oceans.

In the EMaPS paper, *European initiatives in science and technology for deep-sea coring and drilling*, the authors argue that new 'riser' technologies and drilling techniques are urgently required to keep ahead. "Europe has a unique opportunity to build upon its long scientific and financial commitments in deep-sea coring and drilling," write the report's editors, Laurent d'Ozouville and Colin Jacobs.

More research is needed to make deep-sea extraction cheaper and less problematic.

At the moment Europe has a broad expertise in terms of the high-resolution study of sea-level changes and in many areas of exploration science, including the analysis of continental margins, an important area for exploiting commercial resources such as oil, and for understanding natural hazards such as earthquakes and slope instability. However, the standard riser systems needed to study these fields have reached their technical limits.

In their place the EMaPS paper recommends the development of a new generation of 'slimline' risers. These can not only operate at greater depths (up to 4,000 metres), they are also much smaller and about 10% of the weight of their standard counterparts. This would allow smaller vessels to carry these tools, reducing costs. A new series of down-hole exploration tools, such as logging sensors and in situ laboratories, are also required.

The paper also claims that geoscientists should have access to additional drilling platforms on top of the Ocean Drilling Program's ship *JOIDES Resolution* and recommends the establishment of a "permanent, active and concrete dialogue" between the scientific community and Europe's oil and gas industries in order to develop the necessary technologies and to target common drilling sites - effectively to share knowledge and costs.

The European margin, the position paper notes, still has huge untapped reserves of oil and gas at depths of 600 metres to 2000 metres and deeper but more research is needed to make deep-sea extraction cheaper and less problematic. Other scientific goals include obtaining a more detailed understanding of oceanic ridge systems and plans to drill in seismically active regions to gain insights into the formation and deformation of accretionary prisms.

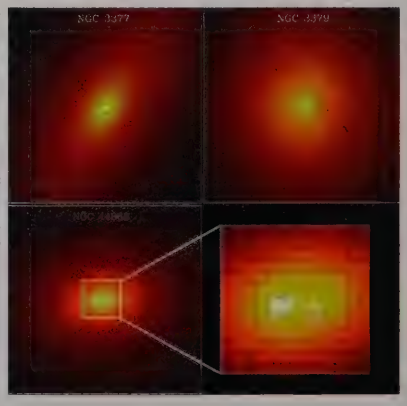
"All these objectives are very ambitious and it will take several years to achieve them," adds d'Ozouville.

Stars and stripes

The USA and Europe have been reaping the benefits of cooperation in space sciences for over 30 years, enabling scientists to discover suspected massive black holes via the Hubble Space Telescope and to gain insights into the structure of the solar interior and heating mechanisms of the corona.

However, there have never been formal guidelines for collaboration, leading to a slightly piecemeal approach. In an effort to remedy this situation, the ESF European Space Science Committee and the Space Studies Board of the US National Research Council have carried out a joint study to identify the lessons to be learnt from both successful and unsuccessful collaborations.

After analysing 13 joint US-European missions, the authors of the study have drawn up a set of recommendations for improving future collaboration between these two regions. They cover a variety of issues such as the goals and rationales of missions, their planning, implementation and management and the roles of the international partners involved. The report of the study will be published in June 1998 and the findings presented to both the European Space Agency (ESA) and the US National Aeronautics and Space Administration (NASA).



Karl Gebhardt (University of Michigan) and Tod Lauer (NOAO)

Hubble vision
The three galaxies above are believed to contain central, supermassive black holes.

Operational activities

The following pages give details of the ESF's operational activities in 1997 including a brief description of how the Foundation works, Committee and Board reports, a comprehensive listing and contacts for our scientific activities, and the year's financial statements.

Contents

How the ESF works

The ESF's main decision-making forum is its General Assembly which brings together senior representatives of all of the Foundation's Member Organisations at an annual meeting in November in Strasbourg.

Implementation of the Assembly's decisions is overseen by the Foundation's Executive Council which meets three times a year. It approves the setting up of new activities, prepares the work of the next Assembly and ensures effective communication with Member Organisations and other relevant institutions. Along with the ESF President and Vice-Presidents, the Executive Council is made up of at least one elected member from each country with Member Organisations and from a balanced range of disciplines. Since 1994, it has been helped in its work by two ad-hoc committees on Membership and Finance.

Ensuring continuity of ESF business between meetings of the Executive Council is the responsibility of the Board. It is constituted by the President, Vice-Presidents, up to five members elected from the Executive Council, and the Secretary General.

In addition, the ESF's ability to run a wide range of activities from organising exploratory workshops to providing science policy advice is crucially dependent on the contribution of its various committees and boards.

Its five Standing Committees (medical sciences, life and environmental sciences, physical and engineering sciences, humanities and social sciences) are made up of leading scientists and representatives from the Foundation's Member Organisations and are responsible for identifying scientific priorities, formulating strategies, developing research agendas and recommending new scientific programmes to be launched.

The Foundation's networks and European Research Conferences are overseen by separate committees reporting to the Executive Council and a number of other committees and boards have been set up in scientific areas requiring specific attention.

The management and administration of the Foundation's business, including both its scientific and science policy activities, is taken care of by the ESF office, directed by the Secretary General, based in Strasbourg.

Assembly, Executive Council and Board meetings 1997

JANUARY
- 23 Board + Standing Committee Chairmen
- 24 Board

FEBRUARY
MARCH
- 21 Board

APRIL
- 21/22 Board
- 22/23 Executive Council

MAY
JUNE
- 11 Board

JULY
AUGUST
SEPTEMBER
- 24/25 Board
- 25/26 Executive Council

OCTOBER
- 15 Board + Standing Committee Chairmen

NOVEMBER
- 26 Board
- 27 Executive Council
- 27/28 Assembly

Committee and board reports

Standing committee reports

The European Medical Research Councils (EMRC)

The EMRC has an important role in pursuing new avenues of research at a higher speed than most other European mechanisms. Building on this strength, the Committee announced its second series of calls for proposals for exploratory workshops, published in *Nature* and *The Lancet* to achieve the maximum response. After peer reviewing over 50 proposals, five workshops were selected for funding in 1997. These were: *Internet and Intranet Use for Cardiology Patient Care; The Genetic Basis for Male Infertility; Interaction of Genes and Maternal Nutrition in Orofacial Clefting; Crosstalk between Steroid Receptors and Other Transcription Factors;* and *Implications of Cardiovascular Specific Gene Expression.*

The Committee also agreed to support an exploratory workshop in 1998 on *Computational Neuroscience* in order to establish the most effective way to organise research in this emerging field in Europe. The Committee earmarked two further areas for workshops in 1998: *Clinical Trials* and *Proteome Analysis.*

The value of exploratory workshops for identifying potential ESF scientific activities was demonstrated by the fact that one of the 1996 workshops on *Multiple Primary Tumours in Oral Cancer* led to a successful application for an ESF network, which began its work in 1998. At the end of the year, two further network applications, emerging from EMRC workshops, were under review on *Nutritional, Environmental and Genetic Factors in Early Human Development* and on *Genetic Susceptibility to Environmental Toxicants.*

In terms of scientific programmes, a new programme on *Immunogenetics of Allergy: towards prevention and care* started in 1997. And the Foundation's *Environment and Health* (ENHE) programme, which is part of a wider collaboration with the World Health Organisation and the European Commission, moved considerably closer to its goal of producing a comprehensive R&TD plan for presentation to the Inter-Governmental Conference on Environmental and Health to be held in London in 1999.

While high-quality research remains central to the EMRC and other ESF Standing Committees, as the Committee made clear in its contribution to the *ESF Plan 1998-2001*, it is becoming equally active in debates about the new challenges facing the medical sciences. During the year, the EMRC provided a detailed response on *Biomedical and Health-oriented Research in the European Commission's Proposals for a Fifth Framework Programme* advocating a number of amendments and additions, many of which appear to have now been taken on board by the Commission. The ENHE programme also seems to have had a significant influence on the Commission's thinking in the field of environment and health. The Committee also participated in discussions about bioethics, providing expert advice and contributing to the development of policy on bioethical issues by both the European Union and the Council of Europe. In addition, the EMRC held a workshop in the Czech Republic, on invitation, on *Quality Control in Medical Research.*

Standing Committee for Life and Environmental Sciences (LESC)

Nineteen ninety seven saw work beginning in a new LESC programme on *Plant Adaptation* and in two new networks on *Alpine Biodiversity* and on *Regional Climate Modelling and Integrated Global Change Impact Studies in the European Arctic* (CLIMPACT).

The Committee also continued its efforts to spearhead a new generation of scientific programmes. For the second consecutive year, LESC issued a call

for proposals for exploratory workshops designed to identify fresh research ideas. Following peer review of the applications, the Committee agreed to support four workshops in 1997. These covered: *Earthquakes and Megacities*; *Forest Soil Response to Forest Ecosystem Restoration*; *Genetically Modified Plants: predicting the interactions and impact of multiple releases*; and *Molecular and Cellular Basis of CNS Regeneration.*

The potential of the exploratory workshop scheme to generate innovative new programme initiatives was underlined in November, when the Executive Council considered five LESC programme proposals, four of which had emerged from 1996 workshops. Three programmes were approved for launching at that time with decisions on a further two being deferred to allow more time for Member Organisations to consider their responses. The ESF Board subsequently approved these two remaining proposals in 1998 enabling all five programmes to start operations in 1998. The new programmes are: *Cyanobacterial Nitrogen Fixation*; *Groundwater Pollution*; *Geodynamics and Ore Deposit Evolution*; *The Response of the Earth System to Impact Processes*; and *Theoretical Biology of Adaptation.* In addition to these new programmes, the Executive Council also approved extensions to two of LESC's flagship programmes: *Europrobe* (as of 1999) and *Biophysics of Photosynthesis.*

LESC also mirrored the Foundation's commitment to focus on fields where it could complement, rather than duplicate, existing initiatives at a European level when it drew up its strategic priorities for the next four years, which the Committee submitted to the ESF's new Plan. LESC's priorities include: structural biology, genome biology, biodiversity, resource management and sustainability of ecosystems, the solid earth, climate research and the marine environment. Activities within a number of these priority themes are already underway. Others have been highlighted in the 1997 call for exploratory workshop proposals. However, the Committee also continues to place a strong emphasis on encouraging spontaneous 'bottom-up' proposals for activities from Europe's scientific community.

In addition, LESC strengthened its voice in the life and environmental sciences by adding the EERO subcommittee on environmental pollution. Its aim will be to enhance European collaboration in research related to processes, impacts and remedial measures associated with environmental pollution, with special reference to toxic chemicals and radionuclides. The 1998 programme on *Groundwater Pollution* is the first product of this new subcommittee.

Complementing other ESF activities related to large facilities, LESC is also taking the lead in undertaking a review of needs for European synchrotron and related beam-lines for biological and biomedical research which will be completed in 1998.

Standing Committee for Physical and Engineering Sciences (PESC)

PESC's new two-stage call for programme proposals proved to be highly successful. The aim of this approach is to balance 'bottom-up' and 'top-down' requirements in launching new ESF programmes. In the first stage, an open call is put out for concrete ideas for innovative ESF programmes - the 'bottom-up' element of the strategy. The responses are examined by the Standing Committee and those that meet the very highest criteria of European scientific value are included in a short-list of around one dozen outline proposals. This shortlist is then circulated to Member Organisations for their comments and to give them the opportunity to express their scientific-strategic priorities - the 'top-down' element.

During 1997, the first call generated more than 40 ideas for programmes. After Member Organisations provided their feedback on the 12 short-listed outline proposals, six were eventually selected. These were: *Electronic Structure Calculations for Elucidating the Complex Atomistic Behaviour of Solids and Surfaces; Fermi-liquid Instabilities in Correlated Metals*; *Molecular Magnets*; *Nanomagnetism and Growth Processes on Vicinal Surfaces*; *Probabilistic Methods in Non-Hyperbolic Dynamics*; *Structuring, Manipulation, Analysis and Reactive Transformation of Nanostructures*. All of these were subsequently approved for launching in 1998 by the Foundation's Executive Council.

The Committee also reinforced its commitment to act as an independent scientific assessor of medium- to large-scale research facilities through its involvement in several major projects. One of these involves the continuing study of the state of current and future demand for neutron sources, an analysis that continues to make bleak reading. Action needs to be taken to ensure that structural research in Europe will not be hindered by a lack of advanced neutron sources in the coming decades. Coincidentally, the ESF was invited by the Austrian Ministry of Science to carry out a review of the scientific merit of creating a pulsed neutron source, as well as a laboratory for crystal research and synthesis in the Austrian region. Details of the outcomes of these reviews can be found in the preceding pages of the annual report.

Another investigation launched by PESC is tackling the scientific case for a 100 Tesla Science European Laboratory. Nine scientific panels

have been set up to elaborate the case for a high-magnetic field Eurolab. The results of this study will subsequently be discussed with the relevant scientific communities in Europe and with the Member Organisations of the ESF. The Committee also contributed to shaping the ESF's future role in large facilities through inputs to the *ESF Plan 1998-2001*. In 1998, PESC is expected to turn its attention to nuclear physics following the publication of the ESF Associated Nuclear Physics Collaboration Committee's recommendations concerning 'a complementary network of facilities' and future 'facilities of excellence' for nuclear physics and nuclear science research in Europe, further confirmation of PESC's growing stature in arbitrating in these issues.

Priority was also given to strengthening the links between the Committee and its Member Organisations with the decision taken to instigate an annual round table meeting of the PESC core group with senior administrators from the Member Organisations.

Standing Committee for the Humanities (SCH)

The Standing Committee for the Humanities had another active year, launching a new workshop scheme and a novel newsletter and adding two new networks to its portfolio. One of the new networks on *Intersign: sign linguistics and data exchange* aims at providing standards and guidelines for the study of sign languages at all levels of language description. The other new network *European Theatre Iconography* is designed to correct a long-standing literary bias in European theatre history by exploring how visual images have permeated national boundaries in a similar way to music.

To publicise its own scientific activities, the SCH produced the first edition of its newsletter *Reflections*. Distributed to 5,000 members of the scientific community, the newsletter included articles on current and future programmes as well as an SCH membership list. It also included a call for proposals for the Committee's new European Research Workshops in the Humanities, launched in 1997. This 'bottom-up' scheme was created to encourage researchers from across Europe to put forward innovative, high-quality ideas for research to be explored at workshops for up to 20 participants. Over 40 applications were received and out of these four were awarded funding. These were: *Contemporary European Literature: common tendencies and developments in European languages with emphasis on narrative and poetry; Ecological Change and Food Security in Africa's Later Prehistory*; *Ethics, Family and Reproductive Technology;* and the *Shi'i Century and the Iranian Milieu*. A fifth workshop was held on *Early Medieval Europe*.

The humanities also demonstrated their ability to play an important role in the natural sciences when the SCH convened an exploratory workshop on *Bioethics*, attended by independent experts and representatives of all the ESF's Standing Committees.

The Asia Committee, a joint SCH/SCSS initiative, was positively reviewed during the year and plans developed for its work to be extended for a further period.

Late in the year, the SCH won the approval of the Executive Council to launch in 1998 a new programme on *Musical Life in Europe (1600-1900): circulation, institutions, representation*. The Committee has also continued to develop its plans for additional new programmes on *Cultural Exchanges in Europe, circa 1350-1750* and, in conjunction with the SCSS, *Changing Media, Changing Europe*.

At a strategic level, the SCH, in its contribution to the *ESF Plan 1998-2001*, identified future research priorities and stressed the need to coordinate and stimulate the construction of large electronic databases and search instruments for the retrieval, consultation and analysis of cultural artefacts.

Standing Committee for the Social Sciences (SCSS)

Under the guidance of a new chairman, Professor Robert Erikson, Secretary General of the Swedish Council for Social Research, one of the highlights of the SCSS' year was an exploratory workshop on *Social Variations in Health Expectancy*, held in Germany in conjunction with the EMRC. Its success convinced the Committee to take the lead in developing an interdisciplinary programme that will address a variety of possible explanations for health variations including employment status, social networks, education, individual coping skills and material and environmental factors.

Also during the year, the SCSS launched a new programme to develop an ESF *Blueprint for a European Social Survey*, following a 1996 feasibility study, and added to its research portfolio two new networks on *Household and Community Dynamics: an Eurasian approach of mobility in past societies* and on *Human Reasoning and Decision Making*. Other SCSS activities ranged from providing detailed input into the drafting of the *ESF Plan 1998-2001* to a review of the *Tackling Environmental Resource Management* (TERM) programme. This latter activity led the Committee to recommend that a second phase of TERM should be funded on an *à la carte* basis. At its November meeting, the Executive Council approved the 1998 launch of TERM phase 2 along with a new

programme of summer schools on *Comparative Studies of Economic Organisation.*

Working with the Foundation's Standing Committee for the Humanities, the SCSS also continued its preparations for the launch of the *Changing Media, Changing Europe* programme. This is expected to throw new light on how Europe views its cultural heritage and how the region's identity is likely to take shape in the future. A proposal for a second stage of the Asia Committee's work has also been under review.

On a broader international note, the Committee made further progress in its work with the US National Science Foundation (NSF), following agreement in 1996 to jointly pursue research on *Social Change and Sustainable Transport* (SCAST). This included meetings to specify the scope of the research agenda. Closer cooperation with the NSF was one of the main issues discussed at the SCSS annual meeting with Member Organisations' senior research administrators. Other subjects debated included the ESF's new Plan and the future of the exploratory grant scheme.

To date, the exploratory grant scheme has proved particularly successful. A review of the first round of grants, awarded in 1995, revealed that this 'seed' funding had helped several teams develop projects that eventually won longer term funding from national agencies. Building on these achievements the SCSS supported eight further exploratory grants in 1997. The topics covered include: *Social and Political Dimensions of Risk in Advanced Societies*; and *Orientations of Young People: citizenship and European identity.* A further call for proposals for 1998 grants was scheduled to be issued in May 1998.

In addition, the SCSS further developed its role as an independent advisor to the European Commission, convening a workshop to discuss the place of socio-economic research in the EC's proposals for a fifth Framework Programme. The workshop's recommendations were subsequently published in early 1998 as a *European Science Policy Briefing* and disseminated widely.

Conference and network committee reports

European Research Conferences (EURESCO)

Aims

Jointly funded by the ESF and EC, European Research Conferences are designed to explore new scientific frontiers for Europe and to work towards possible research agendas by bringing together leading scientists. A high proportion of young researchers is also invited to participate, enabling them to learn and to establish important long-term contacts.

Activities

During 1997, EURESCO held 41 conferences in 10 European countries. The disciplines covered were mathematics (3 conferences), physics (9), chemistry (3), life sciences (11), biomedicine and health (4), geosciences and environment (7), social sciences (3) and humanities (1).

This brought the total number of conferences arranged by EURESCO since its inception in 1989 up to 260. To date, more than 20,000 scientists from across Europe have attended these conferences including 7,000 young researchers.

During the year, a wide-ranging review of the EURESCO scheme was carried out under the chairmanship of Professor Brian Heap (United Kingdom). Concluding that there was strong support across Europe for the continuation of EURESCO, the review panel made a number of recommendations aimed at strengthening the scheme in the future. These have subsequently been taken up in the *ESF Plan 1998-2001* and include the possibility of introducing new funding approaches. The Committee structure will also be revised in accordance with the recommendations during 1998.

Network Committee

Aims

Networks bring together scientists to stimulate and coordinate activities in specific fields in order to develop research at a European level. Support is normally provided for three years at a financial level of 400-600 kFF and provides for workshops, coordination meetings and dissemination. Interdisciplinary research is actively encouraged. In many instances, network reports, publications and recommendations for research may lead to further international collaboration and ESF *à la carte* scientific programmes.

Activities

Twenty-one networks were operational at the end of 1997. These ranged from *Topological Defects* and *Catalytic Membrane Reactors* to *Republicanism: a shared European heritage* and *Social Transformations in Central and Eastern Europe.* Overall, 63 networks have been commissioned since 1985, covering all scientific disciplines.

Following a review of procedures in 1996 and the introduction of two calls per year for applications, there was a significant increase in the number of proposals received in 1997. Out of these, eight received funding. These were: *Alpine Biodiversity; Human*

Reasoning and Decision Making; Topological Defects; European Theatre Iconography; Sign Linguistics; Household and Community Dynamics; Regional Climate Modelling and Integrated Global Change Impact Studies in the European Arctic (CLIMPACT); and *Multiple Primary Tumours in Oral Cancer*. An exploratory workshop was awarded for further development of a proposal on *Management of the Coastal Zone* (CISNET).

EMaPS board and associated committee reports

European Boards for Marine and Polar Science (EMaPS-Boards)

Aims

EMaPS was set up in 1995 to develop strategies that will enable European marine and polar scientists to use their research capacity more effectively and to tackle major long-term issues and programmes which are beyond the financial resources of a single nation to support.

Activities

The Marine Board's strategy of focusing on four 'grand challenges' made further advances in 1997. In terms of coastal management research, one of the four challenges, preliminary steps were taken towards creating a network to strengthen cross-disciplinary activities in this field. The Board also decided to focus its efforts on improving global and regional ocean circulation models as part of its ocean forecasting challenge. This includes the coupling of circulation models with models for biological production, as well as the coupling of models of various scales. Other developments included an exploratory meeting to help devise a science action plan for marine biodiversity and the publication of a position paper on deep-sea coring and drilling. In addition, an EMaPS/EC-MAST workshop examined the potential for a coordinated European research effort into the deep sub-seafloor biosphere. At a more strategic level, the Marine Board has provided comments on the European Commission's proposals for a Fifth Framework Programme, and, at the request of the Council of Europe, prepared a report on the future challenges in European marine science and technology.

The Polar Board's plan for Arctic programmes, meanwhile, continued to move forward. The Board is considering adopting a land-ocean interaction programme for the European Arctic and participating in the US project, SCICEX, which will use a nuclear submarine to survey beneath the ice in the Central Arctic Ocean. During the year, an exploratory workshop led to the successful launch of a new ESF network on *Regional Climate Modelling and Integrated Global Change Impact Studies in the European Arctic* (CLIMPACT). An assessment of new developments in polar technology is also being carried out focusing on automatic platforms, telecommunications and robotics. In addition, a database has been created on the World Wide Web, listing national polar projects where there are opportunities for young scientists and other researchers.

Committee on Radio Astronomy Frequencies (CRAF)

Aims

Representing all the major radio astronomical observatories in Europe, CRAF was established in 1988 with the task "to do its best to keep the frequency bands used for radio astronomical observations in Europe free from interference". CRAF acts as the European voice on radio astronomy frequency protection matters, representing the Radio Astronomy Service (RAS) to the various national and supranational regulatory bodies within Europe.

Activities

As new threats to radio astronomy increase, the work of CRAF has become ever more relevant, in particular with the rising use of satellites for mobile communications. The proposal by the operators of the Iridium satellite system to create a downlink near the 1612 MHz hydroxyl band is the latest potential threat. Working within the SE28 team of the Conférence Européenne des Postes et des Télécommunications, CRAF has also been developing a methodology to calculate exclusion zones around radio observatories within which mobile uplinks would not operate on radio astronomy frequencies.

There is also growing concern about interference to mm-wave astronomy, notably from a satellite-borne cloud radar system planned to operate near 94 GHz. The forthcoming World Radio Conference WRC-99 will consider new frequency allocations above 71 GHz, and CRAF is already preparing a position paper for this. Other achievements have included the publication of the second edition of the CRAF handbook for radioastronomy and the creation of a direct link between the Committee's WWW homepage and that of the European Radiocommunications Office. In addition, from the beginning of 1997, observatories have been able to call on the services of CRAF's full-time pan-European radioastronomy spectrum manager.

European Space Science Committee (ESSC)

Aims

The Committee's objectives include acting as a spokesbody on European space research issues and as a facilitator and organiser of space research programmes and policy in Europe.

Activities

The Committee underlined its commitment to collaboration when it completed a joint study with the US Space Studies Board on the lessons to be learnt from past and present US-Europe space collaborations. The resulting report will be published in June 1998 and its recommendations for improving future collaborations will be presented to both NASA and the European Space Agency.

On the European stage, following the implementation of a new management structure at the ESA, and the grouping of space science with the scientific part of earth observation, the ESSC put forward new recommendations. These stressed the need for a strong cooperation between Earth sciences and applications, as well as the importance of sustaining the momentum in preparing the Earth Explorer Programme. The ESSC also contributed to the ESF's new Plan and published a series of recommendations concerning the place of space research in the Fifth Framework Programme. Contacts have also been initiated with the European Parliament, its Committee on Research, Technological Development and Energy, and its intergroup 'European Sky and Space'. In addition, the Committee launched a Web site linked to the Foundation's.

Effective from 1 January 1998, the ESSC now has a new Chairman, Professor J L Culhane, Professor of Physics at the Department of Space and Climate Physics at University College London.

Nuclear Physics European Collaboration Committee (NuPECC)

Aims

An ESF Associated Committee since 1990, NuPECC's mission is to strengthen European collaboration in nuclear physics and border fields and to define and promote a network of complementary facilities in the region. It also acts as a forum for discussing the scientific validity of creating additional facilities and enhancing existing facilities' instrumentation.

Activities

A large proportion of NuPECC's year was spent preparing a survey on *Nuclear Physics in Europe: highlights and opportunities*, the follow-up to a similar survey in 1991. Six working groups analysed the following topics: nuclear structure at the limits; exotic nuclei and radioactive beams; nucleus-nucleus collisions; phase transitions of nuclear matter; quark and hadron dynamics; nuclear astrophysics; and neutrino physics and fundamental interactions. The survey's results and recommendations have now been published. Based on these and other results, NuPECC will continue to define a network of complementary facilities in Europe. The Committee has also started to investigate the state of resources for nuclear physics in this region. In addition, it published its quarterly magazine, *Nuclear Physics News*, distributing it to 6,000 scientists in Europe, North and South America, Japan and Australasia. In 1997, NuPECC's stature in its field continue to grow. It now represents the communities of 15 countries, and, as a transnational institutional member, the Centre for Theoretical Studies in Nuclear Physics and Related Areas, based in Trento, Italy.

Scientific programmes

Often long-term, ESF scientific programmes bring together substantive research projects carried out by multinational teams of scientists. The following pages give details of the scientific programmes and their steering committees being supported by the ESF in 1997 and of the new programmes commissioned during the year.

Medical sciences

Environment and Health (ENHE)* ** ***

1996-1999
20 contributing organisations

This interdisciplinary programme is part of a joint initiative with the EC and the World Health Organisation to draw up a coherent European R&TD plan to be presented to the 1999 London Intergovernmental Conference on Environment and Health. It is focusing on identifying research priorities in support of policy formulation and on improving the range of tools available for environmental health management.

J Huttunen (Chair) *Finland*
R Kroes (Programme Coordinator) *The Netherlands*
H Autrup *Denmark*
P Beaune *France*
A Bernard *Belgium*
C Boia *Portugal*
C Braun-Fahrländer *Switzerland*
J M Calheiros *Portugal*
E Dybing *Norway*
G Elzinga *The Netherlands*
H Greim *Germany*
A Hofman *The Netherlands*
L-G Nilsson *Sweden*
A Pinter *Hungary*
O Preining *Austria*
M Pugh *Ireland*
J Siegrist *Germany*
Sir Colin Berry *United Kingdom*
G Thiers *Belgium*
L Walløe *Norway*

Observers
C Nolan *European Commission*
R Bertollini *WHO/ECEH*
M Krzyzanowski *WHO/ECEH*
ESF Scientific Secretary: **I Wünning**
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Email: cdurant@esf.org

Immunogenetics of Allergy: towards prevention and care (IGA)

1997-1999
12 contributing organisations

Across Europe, the prevalence of atopic diseases and asthma is already high and is steadily increasing. This programme aims to identify the genes controlling atopy, to increase understanding of the cellular and molecular processes behind the body's immune response towards allergy, and to delineate the interplay between genotype and physiological and environmental factors.

D Charron (Chair) *France*
B Bjorkstén *Sweden*
W Cookson *United Kingdom*
F Inacio *Portugal*
M L Kapsenberg *The Netherlands*
D Kraft *Austria*
C Lahoz *Spain*
J Lamb *United Kingdom*
H Lowenstein *Denmark*
E Maggi *Italy*
R Pauwels *Belgium*
G Peltre *France*
W J Pichler *Switzerland*

The number of "contributing organisations" refers to the number of organisations supporting financially a programme for all or part of its duration

* (also affiliated LESC) ** (also affiliated PESC) *** (also affiliated SCSS)

S Pollack *Israel*
A Radbruch *Germany*
J-C Renauld *Belgium*
A Ruffilli *Italy*
A Svejgaard *Denmark*
E Thorsby *Norway*
ESF Scientific Secretary: I Wünning
ESF Contact: B Schaller
Tel: +33 (0)3 88 76 71 18
Email: bschaller@esf.org

Life and environmental sciences

Airborne Polar Experiment (APE)

1995-1999
4 contributing organisations

The programme concerns the coordination of an airborne experiment which is making use of a former spy plane as a stratospheric platform for *in situ* measurements of the minor atmospheric components, which are responsible for the greenhouse effect.

L Stefanutti (Chair) *Italy*
V Khattatov (Deputy Chair) *Russia*
S Balestri (Assistant to Chair) *Italy*
G Amanatidis *European Commission*
R Azzolini *Italy*
G Braathen *Norway*
G Busca *Switzerland*
B Carli *Italy*
R Jones *United Kingdom*
T Peter *Germany*
L A Sokolov *Russia*
J Ström *Sweden*
G Visconti *Italy*

Observers
R Mackenzie *United Kingdom*
M Molina *United States*
A Tuck *United States*

ESF Scientific Secretary: C A Williams
ESF Contact: C Lobstein
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Email: clobstein@esf.org

Biophysics of Photosynthesis (PHOT)**

1993-1999
15 contributing organisations

The study of photosynthetic reaction centres is an excellent model system for electron transfer reactions, which are crucial to many biological processes, and benefit investigations in molecular biology and biochemistry.

A J Hoff (Chair) *The Netherlands*
J Aghion *Belgium*
R J Cogdell *United Kingdom*
G Garab *Hungary*
G Giacometti *Italy (to Dec 97)*
J Korppi-Tommola *Finland*
S Malkin *Israel*
M E Michel-Beyerle *Germany*
M Miller *Denmark*
J Ormerod *Norway (to Dec 97)*
R Picorel *Spain*
S Styring *Sweden*

ESF Scientific Secretary: A Moth-Wiklund
ESF Contact: P Cosgrove
Tel: +33 (0)3 88 76 71 06
Email: pcosgrove@esf.org

Cyanobacterial Nitrogen Fixation

1998-2002
7 contributing organisations

Nitrogen-fixing cynobacteria play a pivotal role in the global nitrogen cycle and in current attempts to fix nitrogen in economically important crops. The programme brings together scientists from a wide range of disciplinary backgrounds and different countries to study a range of issues in both free-living and symbiotic cyanobacteria and both laboratory and natural communities.

Provisional Steering Committee
B Bergman (Chair) *Sweden*
H Böhme *Germany*
E Flores *Spain*
B Osborne *Ireland*
K Sivonen *Finland*
S Ventura *Italy*
A Wilmotte *Belgium*

ESF Scientific Secretary: A Moth-Wiklund
ESF Contact: P Cosgrove
Tel: +33 (0)3 88 76 71 06
Email: pcosgrove@esf.org

ESF Consortium for Ocean Drilling (ECOD)

1986-1998
10 contributing organisations

The Ocean Drilling Program (ODP) is an international partnership, led by the US National Science Foundation, of scientists and institutions studying the geological and tectonic history of ocean basins world-wide as well as our planet's palaeoenvironment. Through the ESF Consortium, scientists from Belgium, Denmark, Finland, Iceland, Italy, the Netherlands, Norway, Spain, Sweden, Switzerland, and Turkey have made important contributions.

ESF Management Committee for the ODP (EMCO)
S Egelund (Chair) *Denmark*
H Hertogen (Vice-Chair) *Belgium*
C Ehlers *Finland*
G Palmason *Iceland*
T Pedersen *Norway*
A Pérez-Estaún *Spain*
M L Ruscitto *Italy*
D A van der Kroef *The Netherlands*
M von Knorring *Sweden*
J-B Weber *Switzerland*
Y Yilmaz *Turkey*

ESF Scientific Secretary: A Moth-Wiklund
ESF Contact: J Dalton
Tel: +33 (0)3 88 76 71 22
Email: jdalton@esf.org

ESF Scientific Committee for the ODP (ESCO)
J McKenzie (Chair) *Switzerland*
Yngve Kristoffersen (Vice-Chair) *Norway*
I Premoli-Silva *Italy*
N Holm *Sweden*
M C Comas *Spain*
C Ehlers *Finland*
N Görür *Turkey*
A Sveinsbjornsdottir *Iceland*
N Mikkelsen *Denmark*
J Smit *The Netherlands*
D Weis *Belgium*

Scientific Secretary:
S Spezzaferri *Italy*

** (also affiliated PESC)

European Ice Sheet Modelling Initiative (EISMINT)

1993-1997
10 contributing organisations

In the context of understanding the role of ice sheets in the global climate system, mathematical modelling is central to studies of ice-sheet behaviour. This programme came from work within the former joint ESF/EU European Committee for Ocean and Polar Sciences (ECOPS).

C Doake (Chair) *United Kingdom*
H Björnsson *Iceland*
H Blatter *Switzerland*
D Dahl-Jensen *Denmark*
P Holmlund *Sweden*
P Huybrechts *Belgium*
H Miller *Germany*
J Oerlemans *The Netherlands*
C Ritz *France*
I Tabacco *Italy*

ESF Scientific Secretary:
M Fratta (to June 97)
ESF Contact: **P Rowe-Pirra**
Tel: +33 (0)3 88 76 71 29
Email: lesc@esf.org

European Lake Drilling Project (ELDP)

1996-2000
7 contributing organisations

This project is compiling specific annually laminated lake sediment data to study the palaeoenvironmental conditions of Europe. In addition, a long list of other interesting parameters can be measured in these sediment samples such as past magnetic fields, palaeotemperatures, plant distribution through pollen analysis, sediment fluxes and, indirectly, the solar-terrestrial forcing.

J F W Negendank (Chair) *Germany*
B E Berglund *Sweden*
F Gasse *France*
A Paus *Norway (from Jan 98)*
M Ralska-Jasiewicz *Poland*
G Seret *Belgium*
M Sturm *Switzerland*
H Vos *Germany*

Observers
F Trincardi *Italy*
B Zolitschka assistant to Chairman

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European Project for Ice Coring in Antarctica (EPICA)

1996-2000
9 contributing organisations

Geographical location, ice thickness and climatology combine to make Antarctica the storehouse of the longest and most representative proxy data for the composition and temperature of ancient atmospheres. This project of complex logistics and scientific cooperation is the first 'Grand Challenge' identified by the former ESF/EU European Committee for Ocean and Polar Sciences (ECOPS).

J Jouzel (Chair) *France*
H Miller (Vice-Chair) *Germany*
G Orombelli (Vice-Chair) *Italy*
R Gendrin *France (to Sept 97)*
N Gundestrup *Denmark*
C Hammer *Denmark*
H-C Hansson *Sweden*
G Jugie *France*
H Kohnen *Germany (deceased July 97)*
C Lorius *France*
J Oerlemans *The Netherlands*
D Peel *United Kingdom*
D Raynaud *France*
R Souchez *Belgium*
B Stauffer *Switzerland*
J-G Winther *Norway*
I Troen *European Commission*

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Europrobe

1992-2001
18 contributing organisations

Europrobe is working to increase our understanding of the tectonic evolution of the Earth's crust and mantle and the dynamic processes that led to its current state. Drawing on the expertise of more than 1,000 geoscientists from 24 European countries, the programme is studying a section of the lithosphere that straddles Western and Eastern Europe, from the Atlantic to the Urals.

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D Gee (ESSC Chair) *Sweden*
D Maronde (EMC Chair) *Germany*
H Zeyen (Assistant to Chair) *Sweden*
A Adám *Hungary*
J Ansorge *Switzerland*
U Avedis *Austria*
E Banda *Spain (to Oct 97)*
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J Kakkuri *Finland (to Oct 97)*
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A Perez-Estaun *Spain*
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P Vidal *France*
M von Knorring *Sweden*
J-B Weber *Switzerland*
M Wilson *United Kingdom*

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Geodynamics and Ore Deposit Evolution (GEODE)

1998-2002
9 contributing organisations

This programme aims at building a quantitative understanding of the geological processes that result in world class ore deposits. Research will focus on five mineral provinces: the massive sulphides of Iberia, Pancardi, the Baltic Shield, the Urals and Palaeozoic sedimentary basins and will contribute to the search for new deposits and to optimising the sustainable production of known deposits.

Provisional Steering Committee
Chair to be nominated
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F Barriga *Portugal*
A Bjørlykke *Norway*
D J Blundell *United Kingdom*
L Fontboté *Switzerland*
H Papunen *Finland*
E Stumpfl *Austria*
W Viaene *Belgium*
P Weihed *Sweden*
N White *BHP Minerals Exploration Inc*
E Wilhelm *La Source Compagnie Minière SAS*

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Ground Water Pollution

1998-2001
7 contributing organisations

The programme is focused on initiating and promoting multinational, multidisciplinary research on pollution of groundwater by toxic chemicals, radionuclides and by excess nutrients. It focuses on pollution in groundwater systems because of their significance for human and environmental health. The emphasis is on basic and strategic research that has potential for use in maintaining clean water supplies. In order to determine whether prevention of a specific kind of pollution is worthwhile, research is required on the fate and impact of the pollutant, or mixture of pollutants, and on remedial measures to degrade, immobilise or contain them.

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J Grimalt *Spain*
M Horvat *Slovenia*
J P C Lobo-Ferreira *Portugal*
M Salkinoja-Salonen *Finland*
W Verstraete *Belgium*

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Plant Adaptation

1997-2001
15 contributing organisations

Adaptation to environmental conditions has been the key to success for plant species still existing today. Understanding how adaptation takes place is a major issue for both agriculture and forestry as well as for studies on environmental change. This programme aims to take advantage of recent advances in the fields of ecology, genetics, molecular biology and physiology to study issues ranging from climatic adaptation and the genetic basis of adaptation through to understanding and quantifying natural selection.

O Savolainen (Chair) *Finland*
M Aguadé *Spain*
A Bertani *Italy*
F B Christiansen *Denmark*
R Ennos *United Kingdom*
B Hohn *Switzerland*
D W Lawlor *United Kingdom*
I Olivieri *France*
M S Pais *Portugal*
G Theissen *Germany*
J van Damme *The Netherlands*
G Vida *Hungary*

Alternate members
J Ågren *Sweden*
P Engström *Sweden*
P Breyne *Belgium*
M Van Montagu *Belgium*

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Population Biology (POBI)

1994-1998
11 contributing organisations

This programme aims to stimulate synthesis, integration, and an evolutionary approach to ecology and genetics across national borders in Europe. It is focused on three central themes: genetic conflicts; population structure and life histories which share a unifying perspective of evolution.

S Stearns (Chair) *Switzerland*
R Barbault *France*
B O Bengtsson *Sweden*
H C J Godfray *United Kingdom*
I Hanski *Finland*
W Lampert *Germany*
V Loeschcke *Denmark*
J Pasteels *Belgium*
W van Delden *The Netherlands*

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Quaternary Environment of the Eurasian North (QUEEN)

1996-2000
7 contributing organisations

The aim of this programme is to utilise the ongoing activities and projects operating in several sectors of the Eastern Arctic regions and the many bilateral projects between Russian and Western European research groups in order to study modern and past environmental changes in a structured and coordinated manner.

J Thiede (Chair) *Germany*
H Bauch (Assistant to Chair)
V Astakhov *Russia*
D Y Bolshiyanov *Russia*
J A Dowdeswell *United Kingdom*
A Elverhøi *(CAPE liaison)*
S Funder *Denmark*
C Hjort *Sweden*
V M Kotlyakov *Russia*
J Mangerud *Norway*
S M Pryamikov *Russia*
M Saarnisto *Finland*
C Schlüchter *Switzerland*

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Response of the Earth System to Impact Processes (IMPACT)

1998-2002
12 contributing organisations

Impacts of asteroids or comets on the earth surface have played an important role in the evolution of the planet. Building on a successful ESF network, this programme is focusing on 'the nature of impacts and their impact on nature' by studying the effects of impact events, both large and small, on the environment, including atmospheric, climatic, biologic, and geologic interactions and their relations.

C Koeberl (Chair) *Austria*
J-F Müller *Belgium*
L Pesonen *Finland*
E Buffetaut *France*
A Deutsch *Germany*
K Brezsnyanszky *Hungary*
H Dypvik *Norway*
J Munha *Portugal*
H Henkel *Sweden*
A G Green *Switzerland*
I Gilmour *United Kingdom*
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Theoretical Biology of Adaptation (TBA)

1998-2001
12 contributing organisations

In almost any biological research programme, even if it builds on seemingly simple ideas, important qualities of these ideas, such as consistency, productivity and testability are enhanced by an integrated use of mathematics. This programme will help, through a series of integrated workshops and education courses, to ensure that there is a generation of researchers that are not only competent theoreticians but who also have a broader knowledge of biology than has been seen before in Europe.

T Fagerström (Chairman) *Sweden*
F B Christiansen *Denmark*
R Ferrière *France*
A Goldbeter *Belgium*
M Gyllenberg *Finland*
P Hammerstein *Germany*
J A J Metz *The Netherlands*
P Schuster *Austria*
E Szathmary *Hungary*
L Wolpert *United Kingdom*
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Transport Processes in the Atmosphere and Oceans (TAO)

1996-1999
8 contributing organisations

This programme concerns the transport processes in the geophysical fluids, atmosphere and oceans, from a theoretical and numerical point of view. It is not only an exercise of difficult mathematics, but the results will be useful to applied scientists and decision makers in environmental policy.

V Artale (Chair) *Italy (to Dec 97)*
P Haynes (Chair) *United Kingdom*
A Babiano *France*
K Fraedrich *Germany*
S Gama *Portugal*
A Provenzale *Italy*
J Rasmussen *Denmark*
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R Pasmanter *The Netherlands*
O Piro *Spain*
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Tropical Canopy Research (TCR)

1994-1998
6 contributing organisations

In this programme are studied the patterns and processes that lead to and maintain the immense diversity of life in the tropics. The programme should provide a greater understanding of tropical forest ecosystem functioning and the significance of biodiversity in its structural and functional maintenance and regeneration.

E Linsenmair (Chair) *Germany*
H Balslev *Denmark*
A Cleef *The Netherlands*
B Fiala *Germany*
W Morawetz *Austria*
S Sutton *United Kingdom*
Observer
P Charles-Dominique *France*
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Physical and engineering sciences

Applied Mathematics for Industrial Flow Problems (AMIF)

1997-2001
10 contributing organisations

By applying pure mathematics and numerical analysis to the study of turbulence and other associated highly complex flow problems, this programme aims to provide research results of industrial relevance. Its goals are to improve the mathematical development of fluid flow modelling, the advancement of existing numerical solution methods, and to increase understanding of the strengths of new approaches in fluid dynamics, non-linear analysis, and numerical analysis.

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F Brezzi *Italy*
H Deconinck *Belgium*
M Deville *Switzerland*
B Engquist *Sweden*
M Espedal *Norway*
T A Kowalewski *Poland*
O Pironneau *France*
W Wendland *Germany*
P Wesseling *The Netherlands*
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Artificial Biosensing Interfaces (ABI)

1994-1998
11 contributing organisations

This programme was developed through the former European Science Research Councils' Technical Sciences Committee, and links collaborating centres in the fields of characterisation of simple and complex substrates; substrate modification and coupling of biomolecules; matrix effects on biomolecule functions; transduction phenomena and biorecognition.

R P Revoltella (Co-Chair) *Italy*
M Mascini (Co-Chair) *Italy*
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P Coulet *France*
W Göpel *Germany*
J M Kauffmann *Belgium*
M Koudelka-Hep *Switzerland*
J Lekkala *Finland*
B Liedberg *Sweden*
P Tuñon-Blanco *Spain*

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Chemistry of Metals in Biological Systems (METBIO)*

1991-1997
13 contributing organisations

Metals play a role in many important biological functions, such as the actions of most enzymes, the transfer of signals, and the formation of minerals as in teeth or bones. This research field is currently called bioinorganic chemistry. It has an interdisciplinary nature involving chemists, biochemists, as well as microbiologists and spectroscopists.

C D Garner (Chair) *United Kingdom*
J Ulstrup (Vice-Chair) *Denmark*
K K Andersson *Norway*
I Bertini *Italy*
R R Crichton *Belgium*
S Forsén *Sweden*
C Gómez-Moreno *Spain*
F Gonzales-Vilchez *Spain*
H Sigel *Switzerland*
I Sóvágó *Hungary*
A Trautwein *Germany*
C Veeger *The Netherlands*
A Xavier *Portugal*

* (also affiliated LESC)

Observer
R Weiss *France*

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Control of Complex Systems (COSY)

1995-1999
16 contributing organisations

The COSY programme aims to promote a multidisciplinary activity which will enable basic theory to be furthered on control science and systems modelling and integration, thus bridging the gap between conceptual, analytical and experimental control engineering. In particular, it aims to study tools which are capable of analysing control systems with the increased complexity and hybrid nature resulting from compatible, consistent use of combined heuristic, quantitative and qualitative information, together with expert knowledge, in a supervised control system architecture.

M Thoma (Chair to Oct 97) *Germany*
K J Åström (Chair) *Sweden*
P Albertos *Spain*
M Blanke *Denmark*
Z Bubnicki *Poland*
A Dourado-Correia *Portugal*
P Frank *Germany*
M Gevers *Belgium*
A Isidori *Italy*
L Keviczky *Hungary*
U Kortela *Finland*
R J Patton *United Kingdom*
W Schaufelberger *Switzerland*
E Tulunay *Turkey*
J C Willems *The Netherlands*

Observer
G Dimirovski *F Y Republic of Macedonia*

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Electronic Structure Calculations for Elucidating the Complex Atomistic Behaviour of Solids and Surfaces (STRUC- ψ κ)

1998-2002
16 contributing organisations

This programme concerns an expanding field in mainstream physics, surface science and materials science, with new applications pushing into mineralogy, chemistry and even to calculations in biology. It aims at enabling the sharing of a broad range of techniques and new developments, and forging links between experimentalists in the growing range of applications.

Provisional Steering Committee
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H Dreysse *France*
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R Nieminen *Finland*
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E Wimmer *France*

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Fermi-Liquid Instabilities in Correlated Metals (FERLIN)

1998-2002
8 contributing organisations

Metals are usually described within the framework of Fermi-liquid theory. Recently striking deviations from

Fermi-liquid behaviour have been found in several heavy-fermion systems. This programme will aim at making a definite assignment of the non-Fermi liquid behaviour in a given system to a particular scenario and shed light on the microscopic origin, in particular on the type of excitations that are responsible for non-Fermi liquid behaviour at the critical point.

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A Amato *Switzerland*
E Bauer *Austria*
Y Bruynseraede *Belgium*
J Flouquet *France*
G G Lonzarich *United Kingdom*
P Prelovsek *Slovenia*
F Steglich *Germany*

Guest members
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P Wölfle *Germany*

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Highly Structured Stochastic Systems (HSSS)

1997-2000
10 contributing organisations

Complex stochastic models have in recent years found applications in areas as diverse as expert systems, genetics, and statistical mechanics. This programme is bringing together researchers from the related areas of probability and statistics to tackle new challenges including developing diagnostic and analytic tools for model criticism; understanding sensitivity of models to local specifications; identifying limits of causal interpretation in networks representing observational studies; and extending the theory and methodology to systems that develop over time.

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A Frigessi *Italy*
R D Gill *The Netherlands*
P Green *United Kingdom*
N L Hjort *Norway*
A O'Hagan *United Kingdom*
S Richardson *France*
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Mathematical Treatment of Free Boundary Problems (FBP)

1993-1997
16 contributing organisations

Free boundaries are curves or surfaces with *a priori* unknown location in space which separate regions with different characteristics. They occur in a variety of natural and technological processes and have the common characteristics of requiring complex and difficult mathematics. The rapid growth of this topic and the new and difficult mathematical challenges have required a continuous combined effort by European FBP scientists in order to maintain their enhanced interaction and contribution to the scientific development of this important area.

J F Rodrigues (Chair) *Portugal*
H W Alt *Germany*
A Bossavit *France*
J I Diaz *Spain*
H van Duijn *The Netherlands*
P Neittaanmaki *Finland*
M Niezgodka *Poland*
M Primicerio *Italy*

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Molecular Magnets (MM)

1998-2002
11 contributing organisations

This transdisciplinary programme is focusing on the synthesis and on the study of multifunctional properties of molecular magnets towards molecular electronics. It aims to develop a rational synthesis of new molecular magnetic systems. In particular, it hopes to increase understanding of the electronic structures of the molecular systems, related to their structures and to their physical properties, particularly spin density, spin localisation and delocalisation, electron-transfer, magnetic photo-excited states.

M Verdaguer (Chair) *France*
A Ceulemans *Belgium*
P Day *United Kingdom*
S Decurtins *Switzerland*
D Gatteschi *Italy*
P Gütlich *Germany*
O Kahn *France*
W Linert *Austria*
D Mihailovic *Slovenia*
J Mrozinski *Poland*
F Palacio *Spain*
J Reedijk *The Netherlands*
H Toflund *Denmark*

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Nanomagnetism and Growth Processes on Vicinal Surfaces (NANOMAG)

1998-2001
7 contributing organisations

This programme will bring together leading specialists in fields including: growth of metallic self-organised nanostructures on vicinal surfaces, magnetic domain visualisation, X-ray magnetic diachroism, non-linear optics in ultrathin layers with controlled roughness, and theory of nanomagnetism. It aims to address fundamental problems so that R&D can meet the challenge of developing significantly improved high-density storage disks.

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G Bayreuther *Germany*
Y Bruynseraede *Belgium*
B Carrière *France*
C Lodder *The Netherlands*
H Szymczak *Poland*
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R Miranda *Spain*

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Probabilistic Methods in Non-Hyperbolic Dynamics (PROBAB)

1998-2002
11 contributing organisations

Probabilistic and statistical methods are becoming increasingly important in understanding deterministic dynamical systems. This programme will help to unify European efforts directed at meeting the challenge of extending and generalising the techniques of hyperbolic dynamics to study non-hyperbolic systems.

S van Strien (Chair) *United Kingdom*
L Arnold *Germany*
K Astala *Finland*
V Baladi *Switzerland*
M Benedicks *Sweden*
Z Coelho *Portugal*
P Collet *France*
F Dumortier *Belgium*
S Luzzatto *United Kingdom*
F Przytycki *Poland*
F Takens *The Netherlands*

Guest member
C Liverani *Italy*

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Process Integration in Biochemical Engineering (PIBE)*

1992-1997
14 contributing organisations

The main focus of this research is on integrated bioprocessing, an interdisciplinary approach that includes protein, metabolic and process engineering in order to link basic development in the biosciences with possible industrial application.

K Ch A M Luyben (Chair)
The Netherlands
L A M van der Wielen (Secretary)
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R Aarts *Finland*
J M S Cabral *Portugal*
S O Enfors *Sweden*
P Kieran *Ireland*
M Lilly *United Kingdom*
M Reuss *Germany*
J J Van Beeumen *Belgium*
J Villadsen *Denmark*
U von Stockar *Switzerland*

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Relativistic Effects in Heavy Element Chemistry and Physics (REHE)

1993-1997
10 contributing organisations

This programme enables European scientists to share in forthcoming developments in relativistic quantum chemistry and relativistic molecular physics, bringing together the expertise of workers in different branches of the field and overcoming communication barriers.

P Pyykkö (Chair) *Finland*
E J Baerends *The Netherlands*
J P Daudey *France*
K Faegri *Norway*
I P Grant *United Kingdom*
B Hess *Germany*
J Karwowski *Poland*
K Schwarz *Austria*
A Sgamellotti *Italy*

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Structuring, Manipulation, Analysis and Reactive Transformation of Nanostructures (SMARTON)

1998-2002
8 contributing organisations

Supramolecular chemistry has been described as the chemistry beyond the molecule, the study of chemical species held together by non-covalent intermolecular bonds. This programme aims at developing novel supramolecular systems, to understand the driving forces that allow two and three-dimensional organisation, to develop methods and tools to investigate, address, manipulate and change these structures, and finally to exploit their specific properties.

Provisional Steering Committee
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K Müllen *Germany*
J K M Sanders *United Kingdom*
J Becher *Denmark*
R J M Nolte *The Netherlands*
J P Sauvage *France*
F Stelzer *Austria*

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Vapour-phase Synthesis and Processing of Nano-particle Materials (NANO)

1995-1999
10 contributing organisations

The NANO programme aims to promote, by bringing together researchers from the aerosol community and the materials science community, the synthesis of ceramic aerosols and films using gas phase techniques. The aim is to generate single-phase, or nanodispersed structural ceramic materials and electroceramics with new or improved properties.

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J Schoonman (Co-Chair) *The Netherlands*
B J Briscoe *United Kingdom*
J Carlsson *Sweden*
H Gleiter *Germany*
M Grätzel *Switzerland*
E I Kauppinen *Finland*
H Livbjerg *Denmark*
J Pielaszek *Poland*
R Winand *Belgium*

Observer
J C Joubert *France*

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Humanities

Asian Studies ***

1995-1997
13 contributing organisations

The Asian Studies programme was started as a joint initiative of the Standing Committees for the Humanities and the Social Sciences. Its aim is to develop interdisciplinary collaborative projects in the broad field of Asian Studies, with an emphasis on the study of contemporary Asia. Activities include the selection of postdoc-fellows, the organisation of international workshops joint-ventured with Asian counterparts, and a database of European researchers on Asia. The programme is run by the ESF Asia Committee. A first mandate period ran from 1995 to 1997, when the programme was reviewed. In 1998 preparations are being made for a second mandate period. The programme will bid for *à la carte* funding from 1999-2001.

Th Svensson (Chair) *Denmark/Sweden*
D Lombard (Vice-Chair) *France (Deceased Jan 98)*
W A L Stokhof (Secretary) *The Netherlands*
J C Breman *The Netherlands*
E Collotti Pischel *Italy*
J-P Drège *France*
G Dudbridge *United Kingdom*
Gh Gnoli *Italy*
V T King *United Kingdom*
W Klenner *Germany*
B Kölver *Germany*
K Kracht *Germany*
U Kratz *United Kingdom*
C MacDonald *France*
W Marschall *Switzerland*
J Martinussen *Denmark*
J R Pitte *France*
K M Schipper *The Netherlands*
E Steinkellner *Austria*
N Thê Anh *France*
P-E Will *France*

Observers
M Boiteux *Ministère de l'Enseignement Supérieur et de la Recherche, France*
C Glück *Association for Asian Studies, United States*
M Van Hall *Ministry of Education, Cultural Affairs and Science, The Netherlands*
C Kurokawa *The Toyota Foundation*

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Concepts and Symbols of the 18th Century in Europe (CSE)

1994-1997
11 contributing organisations

The 18th century was an important moment in the development of European society and culture. This programme attempts to recreate the symbolic universe of this period by studying five main issues: enlightenment, man and nature, opinion, liberty and visualisation.

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R Darnton *United States*
J Ehrard *France*
N Hampson *United Kingdom*
C Iglesias Cano *Spain*
F Moureau *France*
J Pedersen *Denmark*
D Roche *France*
C Salomon-Bayet *France*
J Starobinski *Switzerland*
G von Proschwitz *Sweden*
T Winther *Norway*

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The Evolution of Chemistry in Europe 1789-1939 (HIOC)

1993-1997
10 contributing organisations

At the end of the 18th century, chemistry moved from being an 'alchemist's art' to a fully-fledged science. This programme is studying three main themes in the historical development of chemistry: the role and importance of Lavoisier's *nomenclatura*; the change in the academic and social status of the chemist; and the contribution that chemistry has made to public health and welfare.

C Meinel (Chair) *Germany*
F Abbri *Italy*
R G W Anderson *United Kingdom*
B Bensaude-Vincent *France*
F Caron *France*
N Dazzi *Italy*
D M X Donnelly *Ireland*
A L Janeira *Portugal*
D Knight *United Kingdom*
H Kragh *Denmark*
L A Lundgren *Sweden*
J Ordóñez *Spain*
P R Roulet *Switzerland*
I Stengers *Belgium*

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Individual and Society in the Mediterranean Muslim World (ISMM)

1996-1999
16 contributing organisations

The objective of this European programme is to seek to define the relationship between the individual and society in such a way as to understand, for each period of Islamic history, the organisation of interdependent relationships, the position attributed to the individual, and the creation of a hierarchy of the values which rule society.

R Ilbert (Chair) *France*
A Avanzini *Italy*
C J Bürgel *Switzerland*
M H Chérif *Tunisia*
F Dassetto *Belgium*
J H R Davis *United Kingdom*
L T Fawaz *United States*
U Haarmann *Germany*
J Hjärpe *Sweden*
R Kruk *The Netherlands*
M Marin *Spain*
T Melasuo *Finland*
G Mirdal *Denmark*
E Toledano *Israel*
K S Vikor *Norway*
J Zdanowski *Poland*

Observers
A Kazancigil *Germany*
B Marino *Syria*

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*** (also affiliated SCSS)

Musical Life in Europe, 1600-1900: circulation, institutions, representation (MLE)

1998-2001
18 contributing organisations

During this 300 year period, the complexities of European music and its evolution mirrored many of the developments of European society, notably growing internationalisation. This programme will concentrate on the internationalisation of musical practices and tastes as well as resistance to this phenomenon including the rise of nationalism. Musical life in Europe will be considered as the whole of the processes of production, distribution, communication and the reception of musical works.

C H Mahling (Co-Chair) *Germany*
C Meyer (Co-Chair) *France*
E Wolf (Co-Chair) *United States*
G Andersson *Sweden*
D Beales *United Kingdom*
L Bianconi *Italy*
D Garcia Fraile *Spain*
A Gerhard *Switzerland*
K Komlós *Hungary*
J H Koudal *Denmark*
J Ling *Sweden*
P Petrobelli *Italy*
M Vainio *Finland*
H Vanhulst *Belgium*

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The Transformation of the Roman World (TRW)

1993-1997
16 contributing organisations

This programme has shed light on the social and cultural transitions that are currently affecting Europe by studying the ancient Roman world during its period of transformation.

J Arce (Co-ordinator) *Spain*
E Chrysos (Co-ordinator) *Greece*
I Wood (Co-ordinator) *United Kingdom*
G Akerström-Hougen *Sweden*
M Barcelo *Spain*
V Bierbrauer *Germany*
G-P Brogiolo *Italy*
A Dierkens *Belgium*
N Hannestad *Denmark*
M Mazza *Italy*
M Mostert *The Netherlands*
P Périn *France*
W Pohl *Austria*
H H van Regteren Altena *The Netherlands*
H G Resi *Norway*
L Cracco Ruggini *Italy*
F Theuws *The Netherlands*
P Urbanczyk *Poland*
L Webster *United Kingdom*
C Wickham *United Kingdom*

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Social sciences

Blueprint for a European Social Survey (ESS)

1997-1998
19 contributing organisations

A European Social Survey (ESS) holds the potential of becoming a major innovative step in achieving the necessary infrastructure for effective comparative analysis of European citizens' values and attitudes in the face of social, economic and political change. In preparing a blueprint for an ESS as a regular research instrument, this initiative will address also the important issue that such a survey could fulfil the equivalent need for the social scientist that the 'large research facility' does for the natural scientist.

Steering Committee
M Kaase (Chair) *Germany*
R Åberg *Sweden*
A Brandão Moniz *Portugal*
B Cautrès *France*
N Diamandouros *Greece*
H Domanski *Poland*
Y Esmer *Turkey*
H Gaus Ghent *Belgium*
R Jowell *Chairman ESS Methodology Committee*
S Kuhnle *Norway*
M Laver *Ireland*
G Martinotti *Italy*
K H Müller *Austria*
L Nordberg *Finland*
N Ploug *Denmark*
J Ramón Montero *Spain*
I A L Stoop *The Netherlands*
F Thys-Clément *Belgium*
N Tos *Slovenia*
M Warren *United Kingdom*

Observer
S Schwartz *Israel*

Methodology Committee
R Jowell (Chairman) *United Kingdom*
J Billiet *Belgium*
P Lynn *United Kingdom*
N Mayer *France*
E Mochmann *Germany*
J Ramon Montero *Spain*
W Saris *The Netherlands*
A Schizzerotto *Italy*
J van Deth *Germany*
J Vogel *Sweden*
M Kaase *Chairman ESS Steering Committee*

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Comparative Studies of Economic Organisations (CSEO)

1998-2000
13 contributing organisations

This new programme of multidisciplinary summer research institutes will focus on the interface between business culture, economic organisations and institutions. The institutes will combine workshops for experienced scholars with a research training summer school for young researchers.

Steering Committee in course of formation

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European Management and Organisations in Transition (EMOT)

1993-1997
7 contributing organisations

EMOT has looked at the different types of economic organisation within Europe and how these are changing, as well as interregional and

international integration of organisations as firms respond to the new climate of internationalism within Eastern and Western Europe.

A Grandori (Co-Chair) *Italy*
R Whitley (Co-Chair) *United Kingdom*
B Mundell (Research Co-ordinator) *Italy*
J L Alvarez *Spain*
T Colbjørnsen *Norway*
L Engwall *Sweden*
H Gahmberg *Finland*
A Kieser *Germany*
P E Mouritzen *Denmark*
G A van der Knaap *The Netherlands*
A Wassenberg *The Netherlands*

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Geographic Information Systems: data integration and data base design (GISDATA)

1993-1997
15 contributing organisations

Building on national research efforts, GISDATA's aim has been to promote collaborative ventures that will help researchers overcome the limitations of integrating pan-European spatial data as well as design pan-European databases and environmental and social applications that can be used across Europe.

I Masser (Co-Chair) *United Kingdom*
F Salgé (Co-Chair) *France*
M Craglia (Research Co-ordinator) *United Kingdom*
A M Arnaud *Portugal*
H-P Bähr *Germany*
K Brassel *Switzerland*
J-P Donnay *Belgium*
M Fischer *Austria*
M Goodchild *United States*
E Holm *Sweden*
P Mogorovich *Italy*
N D Polydorides *Greece*
H J Scholten *The Netherlands*
E M Sorensen *Denmark*
G H Strand *Norway*
A Susanna *Italy*

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Learning in Humans and Machines (LHM)

1994-1997
10 contributing organisations

Drawing on psychology, computer science, educational research and sociology, this programme's objective is to create a new discipline in order to help us understand learning processes. In its last phase the programme is integrating elements of neuroscience and neurocomputing.

H Spada (Co-Chair) *Germany*
L Saitta (Co-Chair) *Italy*
F Neri (Research Co-ordinator) *Italy*
P Reimann (Research Co-ordinator) *Germany*
P Dillenbourg *Switzerland*
E Lehtinen *Finland*
P Light *United Kingdom*
P Mendelsohn *Switzerland*
G Mirdal *Denmark*
L G Nilsson *Sweden*
M van Someren *The Netherlands*
G Vignaux *France*

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Tackling Environmental Resource Management (TERM)

Phase 1: 1995-1997
14 contributing organisations

Phase 2: 1998-2000
12 contributing organisations

TERM provides a forum where social science researchers involved in environmental studies at a national level can pool and share their expertise to tackle European-wide issues. The programme is also building up a comprehensive inventory of social science research in this field, enabling scientists to identify prospective partners and build on their current achievements.

Steering Committee Phase 1
B van der Knaap (Chair) *The Netherlands*
F Chiarello *Italy*
R del Ciello *Italy*
D Frey *Germany*
O Godard *France*
R Hoppe *The Netherlands*
M Redclift *United Kingdom*
J Skea *United Kingdom*
M Skou Anderson *Denmark*
H Spada *Germany*

Observer
Andrew Sors *European Commission*

Steering Committee Phase 2
Committee in course of formation

ESF Scientific Coordinator:
P Koutstaal (to June 97)
ESF Scientific Secretary: **J H Smith**
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Scientific programmes at a glance

Medical sciences

Programmes	Duration	Supported for whole or part of duration by Member Organisations from:	Affiliation*
Environment and Health (ENHE)	1996-1999	A, B, CH, D, DK, F, FIN, H, IRL, N, NL, P, S, UK	EMRC/LESC PESC/SCSS
Immunogenetics of Allergy: towards prevention and care (IGA)	1997-1999	A, B, CH, D, DK, FIN, IS, N, NL, P, PL, S	EMRC

Life and environmental sciences

Programmes	Duration	Supported for whole or part of duration by Member Organisations from:	Affiliation*
Airborne Polar Experiment (APE)	1995-1999	CH, D, I, S	LESC
Biophysics of Photosynthesis (PHOT)	1993-1999	B, D, DK, E, F, FIN, H, I, N, NL, S, UK	LESC/PESC
Cyanobacterial Nitrogen Fixation	1998-2002	B, D, E, FIN, I, IRL, S	LESC
ESF Consortium for Ocean Drilling (ECOD)	1986-1998	B, CH, DK, E, FIN, I, IS, N, NL, S, TR	LESC
European Ice Sheet Modelling Initiative (EISMINT)	1993-1997	B, CH, D, DK, F, I, IS, NL, S, UK	LESC
European Lake Drilling Programme (ELDP)	1996-2000	B, CH, D, F, I, N, PL, S	LESC
European Project for Ice Coring in Antarctica (EPICA)	1996-2000	B, CH, D, DK, F, I, N, NL, S, UK	LESC
Europrobe	1992-2001	A, B, CH, D, DK, E, F, FIN, H, IRL, I, N, NL, P, S, UK	LESC
Geodynamics and Ore Deposit Evolution (GEODE)	1998-2002	B, CH, DK, F, FIN, N, P, S	LESC
Ground Water Pollution	1998-2001	B, D, E, FIN, P, S, SLO	LESC
Plant Adaptation	1997-2001	B, CH, D, DK, E, F, FIN, H, I, NL, P, S, UK	LESC
Population Biology (POBI)	1994-1998	B, CH, D, DK, F, FIN, NL, S, UK	LESC
Quaternary Environment of the Eurasian North (QUEEN)	1996-2000	CH, D, DK, FIN, N, S, UK	LESC
Response of the Earth System to Impact Processes (IMPACT)	1998-2002	A, B, CH, D, F, FIN, H, N, P, S, UK	LESC
Theoretical Biology of Adaptation (TBA)	1998-2001	A, B, D, DK, F, FIN, H, NL, S, UK	LESC
Transport Processes in the Atmosphere and Oceans (TAO)	1996-1999	CH, D, DK, F, I, P, S, UK	LESC
Tropical Canopy Research (TCR)	1994-1998	A, D, DK, I, NL, UK	LESC

Scientific programmes at a glance

Physical and engineering sciences

Programmes	Duration	Supported for whole or part of duration by Member Organisations from:	Affiliation*
Applied Mathematics for Industrial Flow Problems (AMIF)	1997-2001	B, CH, D, DK, FIN, I, N, NL, PL, S	PESC
Artificial Biosensing Interfaces (ABI)	1994-1998	B, CH, D, E, F, FIN, I, S	PESC
Chemistry of Metals in Biological Systems (METBIO)	1991-1997	B, CH, D, DK, E, H, I, N, NL, P, S, UK	PESC/LESC
Control of Complex Systems (COSY)	1995-1999	B, CH, D, DK, E, FIN, H, I, NL, P, PL, S, TR, UK	PESC
Electronic Structure Calculations for Elucidating the Complex Atomistic Behaviour of Solids and Surfaces (STRUC- ψ κ)	1998-2002	A, B, CH, D, DK, F, FIN, H, I, IRL, P, PL, S, SLO, UK	PESC
Fermi-liquid Instabilities in Correlated Metals (FERLIN)	1998-2002	A, B, CH, D, F, SLO, UK	PESC
Highly Structured Stochastic Problems (HSSS)	1997-2000	B, CH, D, DK, FIN, I, N, NL, S, UK	PESC
Mathematical Treatment of Free Boundary Problems (FBP)	1993-1997	B, CH, D, DK, E, F, FIN, I, N, NL, P, PL, S, UK	PESC
Molecular Magnets (MM)	1998-2002	A, B, CH, D, DK, E, F, NL, SLO, UK	PESC
Nanomagnetism and Growth Processes on Vicinal Surfaces (NANOMAG)	1998-2001	B, CH, D, F, NL, PL, S	PESC
Probabilistic Methods in Non-Hyperbolic Dynamics (PROBAB)	1998-2002	B, CH, D, F, FIN, NL, P, PL, S, UK	PESC
Process Integration in Biochemical Engineering (PIBE)	1992-1997	B, CH, D, DK, F, FIN, I, IRL, N, NL, P, S, UK	PESC/LESC
Relativistic Effects in Heavy Element Chemistry and Physics (REHE)	1993-1997	D, DK, F, FIN, I, N, NL, PL, S, UK	PESC
Structuring, Manipulation, Analysis and Reactive Transformation of Nanostructures (SMARTON)	1998-2002	A, B, D, DK, F, NL, UK	PESC
Vapour-phase Synthesis and Processing of Nano-particle Materials (NANO)	1995-1999	B, CH, D, DK, FIN, NL, PL, S, UK	PESC

Humanities

Programmes	Duration	Supported for whole or part of duration by Member Organisations from:	Affiliation*
Asian Studies	1995-1997	A, B, CH, D, DK, F, FIN, N, NL, S, UK	SCH/SCSS
Concepts and Symbols of the 18th Century in Europe (CSE)	1994-1997	B, CH, D, DK, F, FIN, I, N, NL, S, UK	SCH
The Evolution of Chemistry in Europe 1789-1939 (HIOC)	1993-1997	B, CH, D, DK, F, FIN, I, IRL, NL, S	SCH
Individual and Society in the Mediterranean Muslim World (ISMM)	1996-1999	A, B, CH, D, DK, E, F, FIN, I, N, NL, PL, S, TR, UK	SCH
Musical Life in Europe, 1600-1900: circulation, institutions, representation (MLE)	1998-2001	A, B, CH, D, DK, E, F, FIN, H, I, N, NL, P, PL, S, UK	SCH
The Transformation of the Roman World (TRW)	1993-1997	A, B, CH, D, DK, E, FIN, GR, I, IRL, N, NL, PL, S, UK	SCH

Social sciences

Programmes	Duration	Supported for whole or part of duration by Member Organisations from:	Affiliation*
Blueprint for a European Social Survey (ESS)	1997-1998	A, B, CH, D, DK, E, F, FIN, I, IRL, N, NL, P, PL, S, TR, UK	SCSS
Comparative Studies of Economic Organisations (CSEO)	1998-2000	B, CH, D, DK, E, FIN, I, N, NL, P, S, UK	SCSS
European Management and Organisations in Transition (EMOT)	1993-1997	CH, D, DK, F, FIN, I, IRL, N, NL, S, UK	SCSS
Geographic Information Systems: data integration and data base design (GISDATA)	1993-1997	A, B, CH, D, DK, F, GR, I, IRL, N, NL, P, S, UK	SCSS
Learning in Humans and Machines (LHM)	1994-1997	B, CH, D, DK, F, FIN, NL, S, UK	SCSS
Tackling Environmental Resource Management (TERM)			
Phase1	1995-1997	B, CH, D, DK, E, F, FIN, I, N, NL, S, UK	SCSS
Phase 2	1998-2000	CH, D, DK, E, FIN, H, I, N, NL, S, UK	SCSS

* Transdisciplinary programmes are listed here under the principal disciplinary area

Scientific networks

ESF networks bring together scientists to explore the potential of developing and carrying out research at a European level. Interdisciplinarity is encouraged. Usually relatively short-term, networks may lead to proposals for scientific programmes. The following pages give details of the scientific networks and their co-ordination committees being supported by the ESF in 1997 and of the new networks commissioned during the year.

For further information contact the Network Scheme
ESF Network Coordinator: **A E S Mayer**
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Medical sciences

Databases of Gene Expression during Mammalian Development

1993-1997

With the application of the techniques of molecular genetics there has been an explosion of data on the relationship between gene expression and the development of mammalian embryos. Together with centres in Greece, Germany, France, Finland and the Netherlands, the MRC Human Genetics Unit (UK) is developing an interactive textual and graphic database.

J Bard (Chair) *United Kingdom*
F Verbeek (Secretary) *The Netherlands*
F Afrati *Greece*
R Baldock *United Kingdom*
E Boncinelli *Italy*
D Davidson *United Kingdom*
B Foehring *Germany*
M Gulisano *Italy*
M H Kaufman *United Kingdom*
T Kavalieros *Greece*
W Lammer *The Netherlands*
K Lawson *The Netherlands*
M Mark *France*
G Muller *Austria*
T Pexieder *Switzerland*
P Rigby *United Kingdom*
K Schughart *Germany*
J Streicher *Austria*
I Thesleff *Finland*
J L Vonesch *France*
D Wilkinson *United Kingdom*
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Multiple Primary Tumours in Oral Cancer: aetiology and clinical significance

1998-2001

Oral cancer is the sixth most common cancer. It's also a persistent disease, with approximately 60% of patients dying within five years of diagnosis, that appears to result from complex interactions between the environment and the human genome. The network aims to test the hypothesis that, in addition to problems in the epithelial cells that line the mouth, both inductive and carcinogen-induced alterations in stromal cell behaviour also occur during the process of field cancerisation.

Committee in course of formation
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Life and environmental sciences

Alpine Biodiversity (ALPNET)

1997-2000

The *Alpine Biodiversity* network involves the study of fauna and flora at three principal levels: at the genotype or molecular level; at the species level; and then at the functional level. The network aims to exploit recent technological developments, and to take advantage of the removal of political barriers in eastern Europe, to build up a comprehensive picture of biodiversity on European mountains.

G Grabherr (Chair) *Austria*
J Nagy (Co-ordinator) *United Kingdom (deceased Feb 98)*
A Andonoski *F Y Republic of Macedonia*
C Chemini *Italy*
V Galushin *Russia*
J I Holten *Norway*
J Jenik *Czech Republic*
F Klötzli *Switzerland*
C Körner *Switzerland*
J P Martínez Rica *Spain*
U Molau *Sweden*
D Thompson *United Kingdom*
R A Väisänen *Finland*
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European-African Songbird Migration

1993-1997

This network creates a coherent European project to study songbirds migrating from Northern Europe to Western Africa. Research centres in 17 European countries have agreed to focus their research on a selected list of 'key species' and to use standardised methods in order to gain substantial insight into migratory strategies of songbirds.

F Bairlein (Chair) *Germany*
P Berthold *Germany*
J Calderón *Spain*
A Hedenström *Sweden*
L Jenni *Switzerland*
A van Noordwijk *The Netherlands*
W Peach *United Kingdom*
S Rumsey *United Kingdom*
F Spina *Italy*
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Fishes of the Antarctic Ocean

1994-1997

In the study of Antarctic fish, a wealth of aspects are relevant to the understanding of the evolution and function of physiological, biochemical and ecological adaptations to extreme living conditions.

G di Prisco (Co-Chair) *Italy*
A Clarke (Co-Chair) *United Kingdom*
E Pisano (Secretary) *Italy*
S E Fevolden *Norway*
C Gerday *Belgium*
G Hubold *Germany*
J-C Hureau *France*
A Neyelov *Russia*
K Skora *Poland*
R E Weber *Denmark*
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Fossil Insects

1996-1999

The large number of fossil insects collected in Europe during recent years led to the establishment of this network, which aims to unite Europe's palaeoentomological community within a common research framework. The network intends to establish a database providing access via the Internet to information about collections, insect bearing localities and publications.

J-C Gall (Chair) *France*
R Willmann (Vice-Chair) *Germany*
E A Jarzembowski (Secretary) *United Kingdom*
O E Heie *Denmark*
J Koteja *Poland*
D M Martill *United Kingdom*
X Martinez-Delclòs *Spain*
A Nel *France*
V V Zherikhin *Russia*
Observer
B David *France*
ESF Scientific Secretary: **A Moth-Wiklund**
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Hominoid Evolution and Environmental Change in the Neogene of Europe

1995-1998

This network focuses on the environmental changes that forced the evolution of the European hominids during the late Neogene period between 14 million and five million years ago. The great apes - i.e. chimpanzees, orang-utans, and gorillas - along with the hominids, evolved from their common ancestors during the late Neogene, yet until recently European studies and fossils had made relatively little contribution to world-wide knowledge of this period of hominoid evolution.

J Agustí (Chair) *Spain*
M Fortelius (Secretary) *Finland*
P Andrews *United Kingdom*
L de Bonis *France*
J L Franzen *Germany*
L Kordos *Hungary*
L Rook *Italy*
N J Shackleton *United Kingdom*
Observer
D Pilbeam *United States*
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Molecular Biology and Ecology of Plasmid-mediated Gene Spread

1994-1997

Bacterial plasmids are important agents of genetic exchange and their study is vital both for emerging genetic engineering techniques and for better understanding of how microbial populations evolved. This network aims to encourage greater communication and exchange of ideas between these laboratories, and in particular to bring the two main

groups of scientists working in the field - microbial ecologists, and molecular biologists - closer together.

M Espinosa (Chair) *Spain*
E M Wellington (Deputy Chair) *United Kingdom*
C M Thomas (Secretary) *United Kingdom*
M Couturier *Belgium*
S Molin *Denmark*
E Lanka *Germany*
P J J Hooykaas *The Netherlands*
J D Van Elsas *The Netherlands*

ESF Scientific Secretary: **A Moth-Wiklund**
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Regional Climate Modelling and Integrated Global Change Impact Studies in the European Arctic (CLIMPACT)

1997-2000

The European Arctic is a particularly sensitive part of the global system. Through a series of three workshops, this network will bring together two important research communities – regional climate modellers and impact researchers. It aims to develop Europe's capacity to carry out regional integrated impact studies, combining both the natural and the socio-economic aspects of global change impacts at a regional level.

M Lange (Chairman) *Germany*
H Cattle *United Kingdom*
J H Christensen *Denmark*
W Cramer *Germany*
D Jacob *Germany*
E Koster *The Netherlands*
P Kuhry *Finland*
A Mariussen *Norway*
D Slagstad *Norway*
U Wiberg *Sweden*

Observers
B Maxwell *Canada*
A Makshtas *Russian Federation*
D Mcginnis *United States*
G Weller *United States*

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Systematic Biology

1994-1997

Species of animals, plants and micro-organisms are disappearing at an alarming rate as a result of human activities, and it is a race against time to classify them and determine their potential usefulness. This network aims to provide a platform for Europe's contribution to this issue by helping to unite European research in the field.

S Blackmore (Chair) *United Kingdom*
N Donlon (Secretary) *United Kingdom*
P Alberch *Spain (deceased March 98)*
K Bremer *Sweden*
W Los *The Netherlands*
A Minelli *Italy*
J Parnell *Ireland*
G Pinna *Italy*
S Tillier *France*
P Trojan *Poland*
M Türkay *Germany*
M Vincx *Belgium*
R Wehner *Switzerland*

Observers
J Busby *United Kingdom*
R Gamez *Costa Rica*
D V Geltman *Russia*
P Raven *United States*
S Wirjoatmodjo *Indonesia*

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Physical and engineering sciences

Catalytic Membrane Reactors

1994-1997

Catalytic membrane reactors (CMRs) could revolutionise the chemical industry through their ability to perform reactions, and the separation of products produced by the reactions, at the same time. They also have great potential in the biotechnology and pharmaceutical industries. This network aims to increase the pace of European research in this important but immature field by encouraging ideas and people to circulate among the member laboratories.

E Drioli (Chair) *Italy*
R-D Behling *Germany*
R Bredesen *Norway*
L Cot *France*
J-A Dalmon *France*
R Hughes *United Kingdom*
Z R Ismagilov *Russia*
M Morbidelli *Italy/Switzerland*
H Strathmann *The Netherlands*

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Converging Computing Methodologies in Astronomy

1995-1997

Astronomy now relies on a wide range of computing techniques to deal with increasingly large images and data sets. The aim of this Network is to unite these techniques within a common framework for collecting, analysing, storing and publishing astronomical data. This has been done by harmonising and coordinating different European research activities in the relevant computing fields, leading towards a consolidated rather than piecemeal approach to astronomical computing.

M C Maccarone (Chair) *Italy*
F Murtagh (Scientific Secretary) *United Kingdom*
A Bijaoui *France*
V di Gesu *Italy*
A Heck *France*
M J Kurtz *United States*
P Linde *Sweden*
R Molina *Spain*
E Raimond *The Netherlands*

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Electroluminescence in Silicon

1995-1997

Silicon is already widely used throughout the information and communication industries, but its optical performance is poor. The use of a porous form of silicon has

achieved significant enhancement, and this network aims to build on these developments at a European level.

B Hamilton (Chair) *United Kingdom*
A Andrianov *Russia*
R Herino *France*
J Kelly *The Netherlands*
W Lang *Germany*
J McGilp *Ireland*
S Ossicini *Italy*

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Oxide Crystals

1994-1997

The network is aimed at an intensive information exchange and coordinated interdisciplinary research in the fields of oxide crystals with relevance to possible new applications for some top priority materials. The collaborators merge fundamental solid state physics and chemistry expertise as well as a wide range of instrumental tools to understand and solve scientific-technical materials problems of oxide crystals. Training of young researchers is another essential aim of the network.

G Corradi (Chair) *Hungary*
M Wöhlecke (Secretary) *Germany*
F Agulló-López *Spain*
R Capelletti *Italy*
M D Fontana *France*
D Schoemaker *Belgium*
J C Soares *Portugal*
P D Townsend *United Kingdom*

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Topological Defects

1997-2000

The *Topological Defects* network is concerned with non-equilibrium field theory in particle physics, condensed matter and cosmology. Topological defects occur in systems that have undergone a phase transition. They are small regions of space that have become trapped in the original phase, or the opposite phase from the rest of the system. The thrust of the network is to learn more about the equilibrium dynamics of the underlying quantum field theory by measuring topological defects that are detectable experimentally.

T W B Kibble (Chair) *United Kingdom*
A Gill (Secretary) *Switzerland*
A Achucarro *Spain*
Y Bunkov *France*
R Durrer *Switzerland*
M Krusius *Finland*
A M J Schakel *Germany*
G Vitiello *Italy*

Observer
W Zurek *United States*

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Email: pesc@esf.org

Humanities

The Convergence and Divergence of Dialects in a Changing Europe

1995-1998

This network is bringing together linguists throughout Europe to study how social, cultural and political changes are affecting traditional dialects in two specific ways: in some cases dialects are *converging* towards each other or towards the standard language of a nation, but in other cases there is *divergence*. The aim is to take a rigorous, scholarly approach to the study of these two types of dialect change, to coordinate existing research in the different countries, and possibly spawn new international collaborations.

P Auer (Co-Chair) *Germany*
F Hinskens (Co-Chair) *The Netherlands*
W Dressler *Austria*
W Haas *Switzerland*
A M Hagen *The Netherlands*
J Kallen *Ireland*
P Kerswill *United Kingdom*
K Mattheier *Germany*
I L Pedersen *Denmark*
A Sobrero *Italy*
J Taeldeman *Belgium*
M Thelander *Sweden*
J A Villena Ponsoda *Spain*

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European Theatre Iconography

1997-2000

The *European Theatre Iconography* network aims to correct a longstanding literary bias in European theatre history by exploring how the non-verbal language of images has permeated national boundaries in a similar way to music. To date theatre history has been dominated by a literary perspective focused on plays and playwrights. The important visual aspect of a theatrical performance has been almost completely ignored. By adopting an interdisciplinary approach and making use of the techniques of the art as well as the social historian, the network will map a novel history of the dissemination of European theatre.

C Molinari (Chair) *Italy*
C Balme (Secretary) *Germany*
M I Aliverti *Italy*
G Brandstetter *Switzerland*
M de Rougemont *France*
R Erenstein *The Netherlands*
M A Katritzky *Germany*
L Senelick *United States*
B Stribolt *Sweden*
O Taplin *United Kingdom*
H Watanebe-O'Kelly *United Kingdom*

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Intersign: sign linguistics and data exchange

1997-2000

Sign languages are natural, full-fledged languages with a grammatical structure that is comparable to that of spoken languages. However, research into their structure in Europe is still a recent development. This network aims at developing standards and guidelines for the study of (European) sign languages at all levels of language description, including the way these languages are acquired.

A E Baker (Chair) *The Netherlands*
B Bergman *Sweden*
P Boyes Braem *Switzerland*
J Kyle *United Kingdom*
E Pizzuto *Italy*
R Schulmeister *Germany*
H C Van der Hulst *The Netherlands*
B Woll *United Kingdom*

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National Socialist Occupation Policy

1994-1997

This network aims to deepen our understanding of the period concerned by analysing gaps in current research, and taking account of new historical sources that have recently come to light in the former Soviet Union. The ultimate goal is to promote a more coherent international base for work that is still predominantly fragmented into national research projects that each have different perspectives.

W Benz (Chair) *Germany*
J Th M Bank (Secretary) *The Netherlands*
F Bédarida *France*
W Dlugoborski *Poland*
H Fleischer *Greece*
G Otto *Germany*
R J Overy *United Kingdom*
P Sipos *Hungary*
J H ten Cate *The Netherlands*
A Trommer *Denmark*
E Weinzierl *Austria*

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Republicanism: a shared European heritage

1995-1998

The network studies the republican tradition as an invaluable resource in both institutional and moral or cultural terms. In addition to its historical research the network is addressing the question of the relevance of republicanism for contemporary political debates in Europe. The exploration of the institutional means by which civil liberty can be rendered consistent with political authority, of how citizens may meaningfully participate in their own government and of how political communities safeguard their own identity has comprised the institutional agenda of republicanism since classical Greek and Roman times.

Q Skinner (Chair) *United Kingdom*
M van Gelderen (Secretary) *United Kingdom*
H-E Bödecker *Germany*
I Comparato *Italy*
I Hampsher-Monk *United Kingdom*
C Larrère *France*

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Science and the Visual Image: 1500-1800

1996-1999

This network aims to develop a new understanding of the interplay between art and science by studying visual images and items used to demonstrate and publicise the great discoveries made in Europe during the golden age of science from 1500 to 1800. A major objective is to break down the rigid barriers that have been drawn between art and science, and show how each benefited from the other.

W Shea (Chair) *France*
A Aeschlimann *Switzerland*
S W G de Clercq *The Netherlands*
G Darmon *Germany*
T Frängsmyr *Sweden*
P Galluzzi *Italy*
R Halleux *Belgium*
M Kemp *United Kingdom*
J Renn *Germany*
W Tega *Italy*

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Social sciences

Gender Inequality and the European Regions

1994-1997

This network is providing a European dimension to the study of gender inequality and the changing role of women in society, taking account of the topic's complexity and regional variety. The aim is to provide a solid theoretical and conceptual underpinning for the development of comparative gender studies in Europe.

S Duncan (Chair) *United Kingdom*
B Pfau-Effinger (Secretary) *Germany*
E Aufhauser *Austria*
L Gonäs *Sweden*
N Kyriazis *Greece*
D Perrons *United Kingdom*
M Solsona *Spain*
S Walby *United Kingdom*

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Household and Community Dynamics: an Eurasian approach of mobility in the past societies

1997-2000

Population registers provide a valuable resource for researchers to study how individuals, families, and societies, reacted under pressure, when crises challenged their traditions or their cultural rules. By analysing 17th to 19th century registers from a variety of countries including Sweden, the Netherlands, Belgium, China and Japan, this network is the first systematic attempt to compare the ways in which different family systems responded to economic stress.

M Oris (Chair) *Belgium*
T Bengtsson *Sweden*
M Breschi *Italy*
R Derosas *Italy*
A Hayami *Japan*
J Lee *United States*
F van Poppel *The Netherlands*

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Human Reasoning and Decision Making

1997-2000

This network is concerned with combining the perspectives of social and cognitive scientists to improve our understanding of how we make decisions. Increasingly, expert opinion is shifting away from the notion that decision makers evaluate options in a rigid rational way by weighing up benefits and probabilities, towards the idea that more flexible strategies are often involved, such as creating new alternatives that may be safer, or in some cases more risky but with greater prospects of success. The network aims to stimulate the development of common research programmes among cognitive scientists, economists, sociologists and philosophers of science.

J-P Caverni (Co-Chair) *France*
R Viale (Co-Chair) *Italy*
S Rizzello (Secretary) *Italy*
M Egidi *Italy*
J Evans *United Kingdom*
G M Hodgson *United Kingdom*
M Jones *United Kingdom*
P Legrenzi *Italy*
J van der Pligt *The Netherlands*
F van Winden *The Netherlands*
M Willinger *France*

Observers
A Leijonhufvud *United States*
M Cohen *United States*

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Political-Economic Dimensions of Enlargement and New Membership of the European Union

1996-1998

This network aims to answer basic questions such as the extent to which enlargement of the European Union will affect European integration, and how some of the disadvantages of admitting new members can be overcome by changing European Union institutions. This is being accomplished by developing new theories of institutional change, and at the same time enhancing understanding of the extent to which the entry of new countries induces such change.

B Steunenberg (Chair) *The Netherlands*
J Bacaria *Spain*
S Berg *Sweden*
D da Empoli *Italy*
P Dunleavy *United Kingdom*
B R Frey *Switzerland*
P Fudulu *Romania*
R Holly *Poland*
A Inotai *Hungary*
J-E Lane *Switzerland*
D Schmidtchen *Germany*
G Schneider *Germany*
F Schneider *Austria*
P Stanovnik *Slovenia*
F Turnovec *Czech Republic*
H Weck-Hannemann *Austria*

ESF Scientific Secretary: **J H Smith**
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Social Transformations in Central and Eastern Europe

1994-1998

The rapid and historically unique social transformations currently underway in eastern Europe are already the subjects of much research. This network has created a structure in which questions, theories, methods of observation, and results can be confronted and compared. A particular aim is to foster close collaboration between researchers in western and eastern Europe.

W Adamski (Co-Chair) *Poland*
M Dobry (Co-Chair) *France*
M Baethge *Germany*
B Greskovits *Hungary*
M Illner *Czech Republic*
D Lane *United Kingdom*
L Morlino *Italy*
I Papadopoulos *Switzerland*
H van der Wusten *The Netherlands*

ESF Scientific Secretary: **J H Smith**
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Scientific networks at a glance

ESF scientific networks are supported by the Basic Budget to which all Member Organisations contribute.

Medical sciences

Networks	Duration	Affiliation*
Databases of Gene Expression during Mammalian Development	1993-1997	EMRC/LESC
Multiple Primary Tumours in Oral Cancer: aetiology and clinical significance	1998-2001	EMRC

Life and environmental sciences

Networks	Duration	Affiliation*
Alpine Biodiversity (ALPNET)	1997-2000	LESC
European-African Songbird Migration	1993-1997	LESC
Fishes of the Antarctic Ocean	1994-1997	LESC
Fossil Insects	1996-1999	LESC
Hominoid Evolution and Environmental Change in the Neogene of Europe	1995-1998	LESC
Molecular Biology and Ecology of Plasmid-mediated Gene Spread	1994-1997	LESC/EMRC
Regional Climate Modelling and Integrated Global Change Impact Studies in the European Arctic (CLIMPACT)	1997-2000	LESC
Systematic Biology	1994-1997	LESC

Physical and engineering sciences

Networks	Duration	Affiliation*
Catalytic Membrane Reactors	1994-1997	PESC
Converging Computing Methodologies in Astronomy	1995-1997	PESC
Electroluminescence in Silicon	1995-1997	PESC
Oxide Crystals	1994-1997	PESC
Topological Defects	1997-2000	PESC

Humanities

Networks	Duration	Affiliation*
The Convergence and Divergence of Dialects in a Changing Europe	1995-1998	SCH
European Theatre Iconography	1997-2000	SCH
Intersign: sign linguistics and data exchange	1997-2000	SCH
National Socialist Occupation Policy	1994-1997	SCH
Republicanism: a shared European heritage	1995-1998	SCH
Science and the Visual Image: 1500-1800	1996-1999	SCH

Social sciences

Networks	Duration	Affiliation*
Gender Inequality and the European Regions	1994-1997	SCSS
Household and Community Dynamics: an Eurasian approach of mobility in the past societies	1997-2000	SCSS
Human Reasoning and Decision Making	1997-2000	SCSS
Political-Economic Dimensions of Enlargement and New Membership of the European Union	1996-1998	SCSS
Social Transformations in Central and Eastern Europe	1994-1998	SCSS

* Transdisciplinary networks are listed here under the principal disciplinary area

Exploratory workshops and grants

In a number of scientific domains, exploratory workshops or grants are being viewed by ESF Standing Committees as an increasingly useful instrument for identifying emerging fields requiring action at a European level. Workshops are aimed at helping European research teams to exchange knowledge, establish new links and to explore the possibilities of developing future collaborative actions. In 1997, the ESF organised the following workshops:

European Medical Research Councils (EMRC)

- **Internet and Intranet Use for Cardiology Patient Care: which standardisation developments are needed?,** Leiden, The Netherlands, 19-20 June 1997
- **The Genetic Basis of Male Infertility,** Paris, France, 12-13 July 1997
- **Interaction of Genes and Maternal Nutrition in Orofacial Clefting,** Dundee, United Kingdom, 10-11 October 1997
- **Crosstalk Between Steroid Receptors and Other Transcription Factors: molecular basis for immunomodulatory and anti-inflammatory effects of steroids,** Ottrott, France, 5-8 November 1997
- **Implications of Cardiovascular Specific Gene Expression,** Maastricht, The Netherlands, 12-14 December 1997

- Joint Standing Committee for the Social Sciences (SCSS)/European Medical Research Councils (EMRC) Workshop on **Social Variations in Health Expectancy in Europe,** Düsseldorf, Germany, 17-18 October 1997

Standing Committee for Life and Environmental Sciences (LESC)

- **Earthquakes and Megacities,** Seeheim, Germany, 1-4 September 1997
- **Molecular and Cellular Basis of CNS Regeneration,** Heidelberg, Germany, 26-28 September 1997
- **Genetically Modified Plants: predicting the interactions and impacts of multiple releases,** Cambridge, United Kingdom, 2-3 October 1997
- **Forest Soil Response to Forest Ecosystem Restoration,** Vienna, Austria, 26-28 October 1997

European Boards for Marine and Polar Science (EMaPS)

Marine science

- **Coastal Zone Management,** Strasbourg, France, 13-14 January 1997
- **Global Ocean Modelling Development,** Paris, France, 5 May 1997
- **Ocean Harvest,** Southampton, United Kingdom, 11-13 June 1997
- **Exploring the Deep Sub-Seafloor Biosphere,** Bristol, United Kingdom, 4 July 1997
- **Coastal Marine Biodiversity,** Yerseke, The Netherlands, 16-18 December 1997

Polar science

- **Regional Climate Modelling and Integrated Global Change Impact Studies in the European Arctic (CLIMPACT),** Frankfurt, Germany, 19 March 1997
- **Barents/Kara Data (Barkode),** Oslo, Norway, 4-5 July 1997

Standing Committee for Physical and Engineering Sciences (PESC)

• **Spider Silk,**
Oxford, United Kingdom,
18 November 1997

PESC also makes considerable use of the workshop mechanism to tackle scientific-strategic issues, such as those related to large research facilities.

Standing Committee for the Humanities (SCH)

• **Cultural Exchanges in Europe,**
Strasbourg, France, 10-11 January 1997
• **Bioethics,**
Strasbourg, France, 21-22 February 1997
• **Cultural Exchanges in Europe,**
Villa Vigoni, Italy, 4-7 September 1997

Standing Committee for the Social Sciences (SCSS)

The following exploratory grants were awarded in 1997:

Social and Political Dimensions of Risk in Advanced Studies

Sustainability, risk and nature: the political-ecology of water in advanced societies
E Swyngedouw
(Project leader - *University of Oxford, United Kingdom*)

The law and economics of very large accidents in Europe
G Skogh
(Project leader - *Lund University, Sweden*)

Risk perceptions and distributional judgements
F Cowell
(Project leader - *London School of Economics, United Kingdom*)

Orientations of Young People: citizenship and European identity

Young people, citizenship and European identity in Scotland/United Kingdom, Cataluña/Spain, Austria and the eastern part of Germany
L Jamieson
(Project leader - *University of Edinburgh, United Kingdom*)

Modelling processes involved in the construction of citizenship and European identity among young people: a social psychological approach
E Lyons
(Project leader - *University of Surrey, United Kingdom*)

Open element

Corporate governance performance pressures and product innovation in European-based companies: a preliminary comparative study
A Tylecote
(Project leader - *Sheffield University, United Kingdom*)

The public/private interface in social policy
B Hvinden
(Project leader - *The Norwegian University of Science and Technology, Dragvoll, Norway*)

Social anthropology of institutions, networks and representations in the new Europe
B Müller
(Project leader - *Centre Français de Recherches en Sciences Sociales, Prague, Czech Republic*)

European research conferences in 1997

European Research Conferences provide a platform for high-level discussions of scientific issues, with opportunities for younger scientists to get involved.

Mathematics

- **Mathematical Analysis: Geometric Analysis on Singular and Noncompact Manifolds,**
W. Müller (Bonn) - San Feliu de Guixols, Spain, 26 June - 1 July
- **Algebra & Discrete Mathematics: Combinatorics - Algebraic, Geometric and Probabilistic Aspects,**
A. Björner (Stockholm) - San Feliu de Guixols, Spain, 27 September - 2 October
- **Number Theory and Arithmetical Geometry: Arithmetical Applications of Modular Forms,**
G. Frey (Essen) - San Feliu de Guixols, Spain, 24 - 29 October

Physics

- **Fundamental Aspects of Surface Science: Surface Physics with Synchrotron Radiation,**
A.M. Bradshaw (Berlin) - Castelvecchio Pascoli, Italy, 6 - 11 June
- **Bose-Einstein Condensation: Bose - Einstein Condensation in Atomic Vapors,**
M. Wilkens (Konstanz) - Castelvecchio Pascoli, Italy, 12 - 17 July
- **Advanced Quantum Field Theory,**
V. Rivasseau (Palaiseau) - La Londe les Maures, France, 28 August - 2 September
- **Molecular Liquids: Orientational Order and Dynamics in Liquids and Glasses,**
G. Palinkas (Budapest) - Aghia Pelaghia, Crete, Greece, 5 - 10 September
- **Quantum Optics,**
L.A. Lugiato (Milano) - Castelvecchio Pascoli, Italy, 13 - 18 September
- **Very High Resolution Spectroscopy with Photoelectrons: Basic Processes and Applications,**
Ch. Jungen (Orsay) - Emmetten, Switzerland, 20 - 25 September
- **Dynamical Properties of Solids,**
W.E. Fischer (Villigen) - Davos, Switzerland, 21 - 26 September
- **Particle - Solid Interactions: Strong Perturbations,**
A. Salin (Talence) - San Sebastian, Spain, 23 - 28 September
- **Electromagnetic Interactions with Nucleons and Nuclei: Electromagnetic Structure of Hadrons and Nuclei,**
J.M. Laget (Gif sur Yvette), Santorini, Greece, 22-26 October

Chemistry

- **Relativistic Effects in Heavy-Element Chemistry and Physics: Relativistic Effects on Structure, Dynamics and Spectroscopy,**
B.A. Hess (Bonn) - Granada, Spain, 8 - 13 March
- **Stereochemistry,**
S.V. Ley (Cambridge) - Bürgenstock, Switzerland, 27 April - 3 May
- **Chemistry and Physics of Multifunctional Materials: Fullerenes in Context,**
P.W. Fowler (Exeter) - Espinho, Portugal, 6 - 11 September

Life Sciences

- **The Molecular Basis of Biological Membrane Protein Structure and Function,**
B. de Kruijff (Utrecht) - Albufeira, Portugal, 19 - 24 April
- **Tetrapyrrole Photoreceptors in Photosynthetic Organisms: Tetrapyrrole Photoreceptors in Photosynthetic Bacteria,**
R.J. Cogdell (Glasgow) - Blarney, Ireland, 25 - 30 April
- **Biology of Molecular Chaperones: Molecular Chaperones under Stress and Non-Stress Conditions,**
R. Zimmermann (Homburg) - Obernai (near Strasbourg), France, 22 - 27 May

• **Control of Metabolic Flux: Approaches for Understanding the Control of Flux in Yeasts and Fungi,**
J.-M. Gancedo (Madrid) - Giens (near Toulon), France, 14 - 18 June

• **NMR in Molecular Biology: From Theory to Experiment: Opportunities for the Future,**
C.M. Dobson and C. Redfield (Oxford) - Oxford, United Kingdom, 23 - 28 August

• **Plant Cell Biology and Biotechnological Applications: Plants as Producers and Raw Material for Industry,**
K.M. Oksman-Caldentey (Helsinki) - Helsinki, Finland, 29 August-3 September

• **Three-Dimensional Sensory & Motor Space: Polysensory Interaction in the Generation of Eye Movements,**
V. Henn (Zürich) - Giens (near Toulon), France, 5 - 10 September

• **Molecular Biology of RNA: Translation, Stability and Localization of mRNA,**
L. Kühn (Epalinges s/Lausanne) - Giens (near Toulon), France, 13 - 18 September

• **Membrane Dynamics in Endocytosis: Molecular Mechanisms,**
J. Gruenberg (Geneva) - San Feliu de Guixols, Spain, 13 - 18 September

• **Protein Targeting: Protein Translocation Across Cellular Membranes,**
W. Neupert (München) - Albufeira, Portugal, 22 - 27 October

• **Molecular Biology of Cellular Interactions: Cell Adhesion Molecules and Receptor Cross-Talk,**
N. Kieffer (Luxembourg) - Granada, Spain, 31 October - 5 November

Biomedicine and Health

• **Functional Status Evaluation: New Methods for Measuring Functional Status in Older People,**
A. Hutchinson (Hull) - San Feliu de Guixols, Spain, 5 - 10 April

• **Disease Prevention: Scientific Controversies,**
R. Saracci (Pisa) - Castelvecchio Pascoli, Italy, 24 - 29 May

• **Hormones, Blood Cells and Immunity: Prolactin, Growth Hormone and Insulin-like Growth Factor-I in the Immune System,**
R. Kooijman (Brussels) - Obernai (near Strasbourg), France, 3 - 8 October

• **Mechanisms in Toxicity: Recent Molecular Advances,**
S. Orrenius (Stockholm) - Acquafredda di Maratea, Italy, 9 - 14 October

Geosciences and Environment

• **Glacial-Interglacial Sealevel Changes in Four Dimensions: Evidence of Sea-Level and Linked Environmental Changes at the Land-Ocean interface,**
R.J.N. Devoy (Cork) - Blarney, Ireland, 5 - 10 March

• **Palaeoclimate Modelling & Analysis: Quaternary Palaeoclimate Analysis,**
J. Guiot (Marseille) - Castelvecchio Pascoli, Italy, 10 - 15 May

• **Polar Regions and Quaternary Climate: Coupling between Northern and Southern Hemisphere Climates during the Last Climatic Cycles,**
J. Jouzel (Gif-sur-Yvette) - Acquafredda di Maratea, Italy, 20 - 25 September

• **The Ecological Setting of Europe - From the Past to the Future: The Impact of Humans on the Environment of Europe since the End of the Ice Age,**
P.C. Woodman (Cork) - Castelvecchio Pascoli, Italy, 20 - 25 September

• **Natural Waters and Water Technology: Microorganisms and Chemistry in Aquatic Systems,**
Ph. Behra (Strasbourg) - San Feliu de Guixols, Spain, 4 - 9 October

• **Oceanography: Coastal Management Research,**
J. Dronkers (Den Haag) - San Feliu de Guixols, Spain, 6-10 December

• **Time Modelling of Bounded Natural Domains: Virtual Environments for the Geosciences,**
H.R.G. Hack (Delft) - near Kerkrade, Netherlands, 9-14 December

Social Sciences

• **Socio-Economic Research and Geographic Information System: Socio-Economic Impacts of New Geographic Information Handling Technologies,**
I. Masser (Sheffield) - Castelvecchio Pascoli, Italy, 17 - 22 May

• **The Political Economy of Economic Policy,**
G.R. Roland (Brussels) - Florence, Italy, 4 - 8 June

• **Economic Growth in Closed and Open Economies,**
P. Aghion (London) and B. Amable (Ivry) - Castelvecchio Pascoli, Italy, 20 - 25 September

Humanities

• **Coping with Sickness: Medicine, Law and Human Rights: Historical Perspectives,**
J.H. Woodward (Sheffield) - Castelvecchio Pascoli, Italy, 22 - 27 March

For a copy of the 1998 Conference programme and application forms, contact the Head of the EURESCO Unit:
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Email: euresco@esf.org
On-line information and application on www server:
http://www.esf.org/euresco

ESF publications in 1997

The ESF disseminates information about its activities through a variety of channels, including a wide range of publications, from annual reports to *ESF Communications*, the Foundation's biannual journal. Listed here are a selection of publications resulting from ESF activity in 1997. Up-to-date information on the Foundation's activities is also available at its World Wide Web site (http://www.esf.org) which now contains more than 1 200 pages.

Corporate publications

About the ESF, 1997
36 pp. brochure
Published by the European Science Foundation, Strasbourg, France, 1997

ESF Annual Report 1996
(English version)
85 pp. ISBN 2-903148-92-9

Rapport annuel de l'ESF 1996
(French version)
85 pp. ISBN 2-903148-93-7
European Science Foundation, Strasbourg, France, 1997

European Science Policy Briefing
Further considerations on the EC's proposal for a fifth Framework Programme
N°1. 12 pp. ESF, October 1997

Medical sciences

Databases of Gene Expression during Mammalian Development

Embryonic Databases
Seminars in Cell & Development Biology
Volume 8, Number 5. 70 pp.
ISSN 1084-9521.
Published by the Academic Press, US, 1997

Programme brochure

Environment and Health (ENHE)
An ESF scientific programme
ESF, June 1997

Life and environmental sciences

European marine and polar science

European initiatives in science and technology for deep-sea coring and drilling
An EMaPS Position Paper
Edited by L d'Ozouville and C Jacobs
34 pp. European Science Foundation, Strasbourg, France, 1997

Transdisciplinary Euroconference on Coastal Management Research
Extended abstracts volume
88 pp. National Institute for Coastal and Marine Management, The Netherlands, December 1997
(copies available from ESF-EMaPS Secretariat)

Transdisciplinary Euroconference on Coastal Management Research
Conference report
100 pp. National Institute for Coastal and Marine Management, The Netherlands, December 1997
(copies available from ESF-EMaPS Secretariat)

European Palaeoclimate and Man since the last Glaciation (EPC)

Rapid mass movement as a source of climatic evidence for the holocene
Special issue: ESF Project
Edited by Burkhard Frenzel et al. (Hsrg.).
444 pp. ISBN 2-903148-94-5, ISSN 0930-4673
Published by Fischer Verlag, Germany, 1997

Glacier fluctuations during the holocene
Special issue: ESF Project
Edited by Burkhard Frenzel et al. (Hsrg.).
182 pp. ISBN 3-437-25518-5, ISSN 0930-4673
Published by Fischer Verlag, Germany, 1997

EUROPROBE

EUROPROBE's Uralides Project
Edited by A Pérez-Estaún, D Brown and D G Gee
Tectonophysics, 276, 355 pp. 1997

Geological and Geophysical Studies in the Trans-European Suture Zone
Edited by T C Pharaoh, R W England, J Verniers and A Zelazniewicz
Geological Magazine, 134 (5), 585-744. 1997

Upper Mantle Heterogeneities from Active and Passive Seismology
Edited by K Fuchs
NATO ASI Series 1, v. 17.
Kluwer Acad. Publ., Dordrecht, 366 pp. 1997

Fishes of the Antarctic Ocean

Proceedings of the 3rd Workshop of the European Science Foundation Network on "Antarctic Fish: Ecology, lifestyle and adaptative evolution. Comparison with Arctic fish"
held in Saint-Rémy-lès-Chevreuse, 13-14 September 1996.
Cybium: revue Européenne d'Ichtyologie
Volume 21, n° 14. 115 pp. ISSN 0399-0974
Published by La Société Française d'Ichtyologie, France, 1997

Fossil Insects

Meganeura
Palaeoentomological newsletter
28 pp. ESF, Winter 1997

Programme brochures

Airborne Polar Experiment (APE)
An ESF scientific programme
ESF, November 1997

European Lake Drilling Programme (ELDP)
An ESF research programme to further the recovery and interpretation of lacustrine palaeoclimatic archives
ESF, March 1997

Plant Adaptation
An ESF scientific programme
ESF, October 1997

Physical and engineering sciences

Committee on Radio Astronomy Frequencies (CRAF)

CRAF handbook for radioastronomy
Prepared by the Committee on Radio Astronomy Frequencies (CRAF)
149 pp. ISBN 2-903148-94-5
Published by ESF, Strasbourg, France, 1997

ESF-PESC panel assessment
Assessment of the Austrian feasibility studies Austron and EURO-CRYST
Report of the Assessment Panel
ESF, November 1997

Programme brochure

Applied Mathematics for Industrial Flow Problems (AMIF)
An ESF scientific programme
ESF, November 1997

Humanities

Asian Studies

Asia and Europe towards the 21st century
Research and education at a European level
An Asia Committee strategy paper
ESF, November 1997

National Socialist Occupation Policy

Die "Neuordnung" Europas NS-Wirtschaftspolitik in den besetzten Gebieten
Edited by R J Overy, G Otto and J Houwink ten Cate, 300 pp. ISBN 3-926893-46-X
Published by Metropol Verlag, Berlin, Germany, 1997

Deutsche Politik im "Protektorat Böhmen und Mähren" unter Reinhard Heydrich 1941-1942
Eine Dokumentation
Edited by M Kárny, J Milotová and M Kárná
301 pp. ISBN 3-926893-44-3
Published by Metropol Verlag, Berlin, Germany, 1997

The Origins of the Modern State in Europe, 13th-18th Centuries

Legislation and Justice
Edited by A Padoa-Schioppa
454 pp. ISBN 0-19-820546-5
Published by Oxford University Press, 1997

Resistance, Representation and Community
Edited by P Blickle
304 pp. ISBN 0-19-820547-3
Published by Oxford University Press, 1997

L'Histoire et les Nouveaux Publics dans l'Europe Médiévale (XIIIe-XVe siècles)
Actes du colloque international organisé par la Fondation Européenne de la Science à la Casa de Vélasquez, Madrid, 23-24 Avril 1993
J.P. Genet
260 pp. ISBN 2-85944-313-4, ISSN 0290-4500
Published by Publications de la Sorbonne, France, 1997

Transformation of the Roman World (TRW)

Kingdoms of the Empire The Integration of Barbarians in Late Antiquity
Edited by W Pohl
230 pp. ISBN 90-04-10845-9
Published by Koninklijke Brill, Leiden, The Netherlands, 1997

The Transformation of the Roman World AD 400-900
L. Webster, M. Brown
258 pp. ISBN 0-7141-0585-6
Published by the British Museum Press, 1997

Social sciences

Economic History of Europe between the Wars

The European Economy Between the Wars

Edited by C H Feinstein, P Temin and G Toniolo
233 pp. ISBN 0-19-877481-8
Published by Oxford University Press, 1997

European Management and Organisations in Transition (EMOT)

Governance at Work The Social Regulation of Economic Relations

Edited by R Whitley and P Hull Kristensen
269 pp. ISBN 0-19-829248-1
Published by Oxford University Press, 1997

The Formation of Inter-organizational Networks

Edited by M Ebers
295 pp. ISBN 0-19-828948-0
Published by Oxford University Press, 1997

Geographic Information Systems: Data Integration and Data Base Design (GISDATA)

Geographic Information Research Bridging the Atlantic

Edited by M Craglia and H Couclelis
605 pp. ISBN 0-7484-0594-1
Published Taylor & Francis Ltd, United Kingdom, 1997

Network on European Communications and Transport Activities Research (NECTAR)

Journal of Transport Geography

Volume 5, Number 1, March 1997
Published by Elsevier Science Ltd, United Kingdom, 1997

Regional and Urban Restructuring in Europe (RURE)

People, Jobs and Mobility in the New Europe

Edited by H H Blotevogel and A J Fielding
312 pp. ISBN 0-471-94901-9
Published by John Wiley & Sons Ltd, Chichester, United Kingdom, 1997

Social Change and Sustainable Transport

Journal of Transport Geography

Volume 5, N°3
Special Issue. 68 pp.
Published by Elsevier Science, UK, 1997

Social Transformation in Central and Eastern Europe

Sisyphus

Volume X
M. Baethge, W.W. Adamski, B. Greskovits
191 pp. ISSN 0208-5070
Published by IfiS, Poland, 1997

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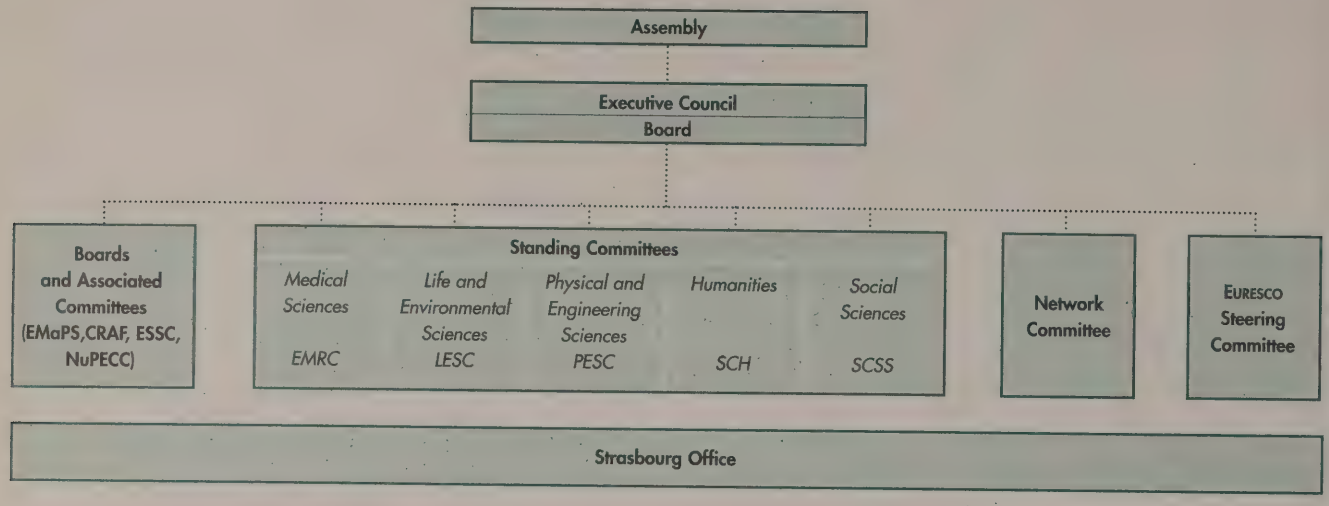
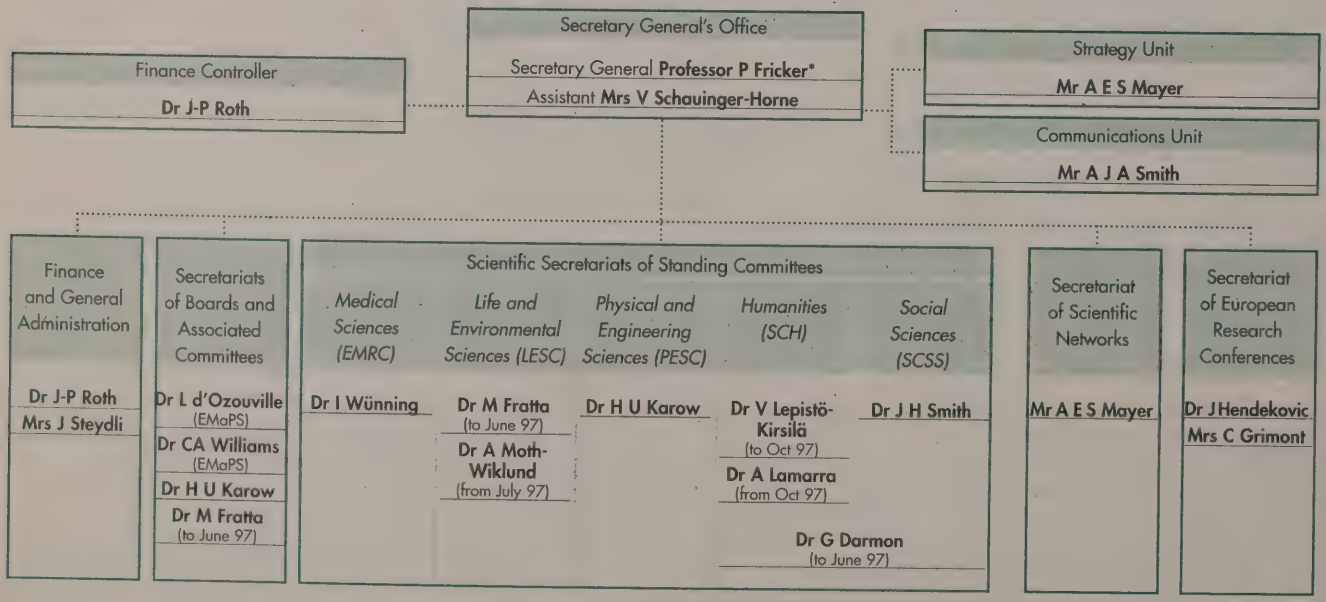
Tel: +33 (0)3 88 76 71 14
Email: jmartinez@esf.org

ESF structure



Structure of the ESF office

(senior staff in post as at 1 January 1998)



*Professor Peter Fricker will step down as Secretary General on 31 May 1998. His replacement will be Professor Enric Banda.

Consultants
Dr M Sparreboom (Asian Studies)
Dr D Evered (Bioethics)

ESF board, executive council and committee membership

(as at 1 January 1998)

In 1997, the ESF General Assembly unanimously approved the appointment of Professor Enric Banda (Spain) to serve a five-year term as Secretary General of ESF. Professor Banda will take over from Professor Peter Fricker on 1 June 1998. In addition, the Electoral Commission recommended to the Assembly that Dr Reinder van Duinen (Netherlands) be appointed an ESF Vice-President, that Dr Daniel Cadet (France) join the Board as a representative of the Executive Council and that the following become members of the Executive Council: Dr D Cadet (France), Professor J Komender (Poland), Professor D N MacCormick (United Kingdom), Professor E Sagarra (Ireland), Dr A Syrota (France), Professor A Trigo de Abreu (Portugal), Professor F E Verbeure (Belgium), and Professor H Walther (Germany). These appointments all took effect on 1 January 1998.

Board

Sir Dai Rees (President) *United Kingdom*
D M X Donnelly (Vice-President) *Ireland (to Dec 97)*
W Kröll (Vice-President) *Germany*
L Oro (Vice-President) *Spain*
R van Duinen (Vice-President) *The Netherlands*
G Björkstrand *Finland*
D Cadet *France*
G Öquist *Sweden*
P Papon *France (to Dec 97)*
P Fricker (Secretary General)* *(to 31 May 1998)*
Secretary: **V M Schauinger-Horne**

Executive Council

Sir Dai Rees (President) *United Kingdom*
D M X Donnelly (Vice-President) *Ireland (to Dec 97)*
W Kröll (Vice-President) *Germany*
L Oro (Vice-President) *Spain*
R van Duinen (Vice-President) *The Netherlands*
G Björkstrand *Finland*
D Cadet *France*
G Öquist *Sweden*
P Papon *France (to Dec 97)*
P Bosi *Italy*
D J Drewry *United Kingdom (to Dec 97)*
J Guðbjarnason *Iceland*
J Hamori *Hungary*
H P Hertig *Switzerland*
V Kaucic *Slovenia*
D Kavlie *Norway*
J Komender *Poland*
C Kordon *France (to Dec 97)*
L Kúznicki *Poland (to Dec 97)*
D N MacCormick *United Kingdom*
J Maggiolly Novais *Portugal (to Dec 97)*
J Martinussen *Denmark*
H Newby *United Kingdom (to Dec 97)*
N K Pak *Turkey*
E N Protonotarios *Greece*
H Rauch *Austria*
E Sagarra *Ireland*
L Simar *Belgium (to Dec 97)*
R Simili *Italy*
A Syrota *France*
A Trigo de Abreu *Portugal*
F E Verbeure *Belgium*
H Gg Wagner *Germany (to Dec 97)*
H Walther *Germany*
P Kind *Observer from the EC*
P Fricker (Secretary General)* *(to 31 May 1998)*
Secretary: **V M Schauinger-Horne**

Electoral Commission (1997)

K L Komarek (Chair) *Austria*
J Bordé *France*
G Chiarotti *Italy*
P Collins *United Kingdom*
F R Dias Agudo *Portugal*
A Eggimann *Switzerland*
R Grunwald *Germany*
S Guðbjarnason *Iceland*
B Halász *Hungary*
E Kobal *Slovenia*
J Kornacki *Poland*
B Öhngren *Sweden*
N K Pak *Turkey*
C Pascual *Spain*
K Paunio *Finland*
E Schenk *The Netherlands*
T Sheedy *Ireland*
M-J Simoen *Belgium*
I Terp *Denmark*
J Traest *Belgium*
L Westgaard *Norway*
Representative of NHRF *Greece*
Secretary: **V M Schauinger-Horne**

**E Banda (Secretary General) from 1 June 1998*

Ad hoc Committee of the Executive Council on Membership

L Oro (Chair) *ESF Vice-President*
P Fricker *ESF Secretary General*
G Björkstrand *Finland*
D Cadet *France*
R Grunwald *Germany*
V Kaucic *Slovenia*
C Kordon *France (to Dec 97)*
L Kúznicki *Poland (to Dec 97)*
D N MacCormick *United Kingdom*
H Newby *United Kingdom (to Dec 97)*
G Öquist *Sweden (to Dec 97)*
C Schneider *Germany (to Dec 97)*
Secretary: **A E S Mayer**

Finance Committee

C Pascual (Chair) *Spain (to Dec 97)*
D Kavlie (Chair) *Norway*
G Agricola *Italy*
M Bowthorpe *United Kingdom (to April 97)*
M Dodet *France*
E Glück *Austria*
R Grunwald *Germany*
P Levaux *Belgium*
N Williams *United Kingdom*
ESF Office:
P Fricker *ESF Secretary General*
J-P Roth *ESF Finance Officer*

Auditor for financial year 1997

B Werbell *Sweden*

European Medical Research Councils (EMRC)

This Committee consists of ad hoc representatives of those ESF Member Organisations which act as Research Councils concerned with medicine and health.

EMRC Executive Group

L Peltonen (Chair) *Finland*
E Dabelsteen *Denmark*
C Griscelli *France*
A Hofman *The Netherlands*
B Konze-Thomas *Germany*
J Komender *Poland*
G Radda *United Kingdom*
G Salvatore *Italy (deceased June 97)*
ESF Scientific Secretary: **I Wünning**
ESF Contact: **B Schaller**
Tel: +33 (0)3 88 76 71 18
Email: emrc@esf.org

Standing Committee for Life and Environmental Sciences (LESC)

W Rathmayer (Chair) *Germany*
C Alzieu *France (to Oct 97)*
E Augstein *Germany*
K Bremer *Sweden*
G Busuoli *Italy*
T H Clutton-Brock *United Kingdom*
M Clynes *Ireland*
A Coomans *Belgium*
R Dyer *United Kingdom*
T Fagerström *Sweden*
E Fereres *Spain*
G Glatzel *Austria*
F Gubensek *Slovenia*
J Jouzel *France*
J A Korstgaard *Denmark*
I Lang *Hungary*
A Matter *Switzerland*
J-C Mounolou *France*
J W M Osse *The Netherlands*
I Sa-Correia *Portugal*
G Salvatore *Italy (deceased June 97)*
O Savolainen *Finland*
F A Seifert *Germany*
A M C Sengör *Turkey*
H Thorgeirsson *Iceland*
A Urbanek *Poland*
L Walløe *Norway*
D Weis *Belgium*
W B Wilkinson *United Kingdom*
D Cadet *ESF Executive Council*
D J Drewry *ESF Executive Council (to Oct 97)*
ESF Scientific Secretary: **M Fratta** *(to June 97)*
ESF Scientific Secretary: **A Moth-Wiklund**
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Standing Committee for the Physical and Engineering Sciences (PESC)

J E Fenstad (Chair) *Norway*
J C André (Vice-Chair) *France (to Dec 97)*
M A Barbosa *Portugal*
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C Bucci *Italy*
P Day *United Kingdom*
R Dekeyser *Belgium*
J P Desclaux *France (to Dec 97)*
D M X Donnelly *Ireland*
G Ertl *Germany*
M S Espedal *Norway*
H Gleiter *Germany*
P Goya *Spain (to Dec 97)*
C Guet *France*
A S Hauksdottir / H P Gislason *Iceland*
V Kaucic *Slovenia*
A Kluwick *Austria*
N Kroó *Hungary*
J M Langer *Poland*
E Larsen *Denmark*
P Mandel *Belgium (to July 97)*
P Martinoli *Switzerland*
M Mattila *Finland*
C Natoli *Italy*
P Omling *Sweden*
V M Orera *Spain*
H N Özgüven *Turkey*
N K Pak *Turkey (to Dec 97)*
T Pakkanen *Finland*
K A Pounds *United Kingdom*
M Rinaldi *Italy*
F W Sluijter *The Netherlands*
J E Sundgren *Sweden*
P Swinnerton-Dyer *United Kingdom*
G Wild *France*
L Vanquickenborne *Belgium (to June 97)*
H Rauch *ESF Executive Council*
Observer
J Ziv *Israel*
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Standing Committee for the Humanities (SCH)

W Blockmans (Chair) *The Netherlands*
J Arce *Spain (to end 97)*
D Barjot *France (to autumn 97)*
D E D Beales *United Kingdom*
G Björkstrand *Finland*
M Blay *France*
M Böhler *Switzerland*
I Bondebjerg *Denmark (to mid 97)*
M Csáky *Austria*
L Droulia *Greece*
E Fischer-Lichte *Germany*
K Gantar *Slovenia*
B Hansson *Sweden*
T Karlsen Seim *Norway*
F Kiefer *Hungary*
P López *Spain*
G Mirdal *Denmark*
V Ólason *Iceland*
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E Sagarra *Ireland*
S Tabaczynski *Poland*
A Verhulst *Belgium*
H L Wesseling *The Netherlands*
S Zoppi *Italy*
R Simili *ESF Executive Council*

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R Ilbert *Islamic Studies*
E König *Linguistics*

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S Hackney *National Endowment for the Humanities (to end 97)*
J Jarab *Central European University, Hungary (to end 97)*
R Ris *Union Académique Internationale (to end 97)*
S Shaked *Israel Academy of Sciences and Humanities*
E Steinkellner *Asia Committee (to mid 97)*

ESF Scientific Secretary: **V Lepistö-Kirsilä** *(to Oct 97)*
ESF Scientific Secretary: **A Lamarra**
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Email: humanities@esf.org

Standing Committee for the Social Sciences (SCSS)

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R Amann *United Kingdom*
I Balogh *Hungary*
E Baltensperger *Switzerland*
R Bohinc *Slovenia*
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M Dalla Costa *Italy (to April 97)*
F Engelstad *Norway (to March 97)*
J Ferreira de Almeida *Portugal*
H Fisek *Turkey (to Oct 97)*
H Gaus *Belgium*
P Gundelach *Denmark*
M Kaase *Germany*
L Kulcsár *Hungary (to Oct 97)*
M Laver *Ireland*
L Leontidou *Greece*
O Listhaug *Norway*
M Marin *Finland*
H Matis *Austria*
C Meidinger *France (to Sept 97)*
J R Montero *Spain*
L G Nilsson *Sweden*
L Paganetto *Italy*
M R Sertel *Turkey*
Th Thorlindsson *Iceland*
F Thys-Clement *Belgium*
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A Wyczanski *Poland*
H Newby *ESF Executive Council (to June 97)*

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B Bertenthal *National Science Foundation, USA*
E Mochmann *Adviser, Social Science Databases*
B Öhngren *COST Technical Committee, Social Sciences*
K Prewitt *Social Science Research Council, USA*

ESF Scientific Secretary: **J H Smith**
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Email: scss@esf.org

European Research Conferences Steering Committee

Committee membership until end January 1998.
Following the 1997 review, a new EURESCO Committee will be established in 1998.

H Gg Wagner (Chair) *Germany*
K Bremer *ESF Standing Committee for Life and Environmental Sciences (LESC)*
E Bayer *European Mathematical Society*
J Biemond *European Association for Signal Processing*
D M X Donnelly *ESF Vice-President*
N N Greenwood *EUCHEM/Federation of European Chemical Societies*
H Hofman *ESF European Medical Research Councils (EMRC)*
H M Keir *European Union of Societies in Experimental Biology*
A Longinelli *European Union of Geoscientists*
P Martinoli *ESF Standing Committee for the Physical and Engineering Sciences (PESC)*
K Newton *ESF Standing Committee for Social Sciences (SCSS)*
L Peltonen *ESF European Medical Research Councils (EMRC)*
R Pick *European Physical Society*
A Verhulst *ESF Standing Committee for the Humanities (SCH)*

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D G Crighton *European Mechanics Society*
A Jacquemin-Sablon *Jacques Monod Conferences*
J Rosenbaum *European Commission*
E P Whitehead *European Commission*

ESF Office:
J Hendekovic *Head of EURESCO Unit*
C Grimont *Conference Manager*
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Email: euresco@esf.org

EURESCO Review Panel

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R Erikson *Sweden*
H P Hertig *Switzerland*
W Hutter *The Netherlands*
C Kordon *France*
C Pascual *Spain*
H Walther *Germany*

Consultant
J Gunning *United Kingdom*

J Hendekovic *ESF*
J-P Roth *ESF*

Network Committee

A Committee of the Executive Council set up to manage the Network operations, and to make recommendations to Council on Network launches.

D M X Donnelly (Chair) *Ireland (to Dec 97)*
G Björkstrand (Chair) *Finland*
W P Blockmans *The Netherlands, SCH*
P Bosi *Italy*
J E Fenstad *Norway, PESC*
R Erikson *Sweden, SCSS*
H P Hertig *Switzerland*
L Peltonen *Finland, EMRC*
W Rathmayer *Germany, LESC*
A Trigo de Abreu *Portugal*
H Gg Wagner *Germany (to Dec 97)*

Secretary: **A E S Mayer**
ESF Contact: **I May**
Tel: +33 (0)3 88 76 71 46
Email: networks@esf.org

EMaPS board and associated committee membership

European Boards for Marine and Polar Science (EMaPS-Boards)

R B Heywood
(Chair Joint Boards Executive)
British Antarctic Survey (to March 97)
D Cadet
(Chair Joint Boards Executive)
Centre National de la Recherche Scientifique

EMaPS-Marine Board Members and their Delegates

Centre National de la Recherche Scientifique
D Cadet (Chair) *France*

Statens Naturvidenskabelige Forskningsråd
K Richardson (Vice-Chair) *Denmark*

Norges Forskningsråd
U Lie (Vice-Chair) *Norway*

Consejo Superior de Investigaciones Cientificas / Secretaría General del Plan Nacional de Investigación Científica y Desarollo Tecnológico
J Tintore (Vice-Chair) *Spain*

Fonds National de la Recherche Scientifique
M Frankignoulle *Belgium*

Fonds voor Wetenschappelijk Onderzoek-Vlaanderen
M Vincx *Belgium*

Suomen Akatemia / Finlands Akademi
M Leppäranta *Finland*

Institut Français de Recherche pour l'Exploitation de la Mer
P David *France*

Deutsche Forschungsgemeinschaft
G Wefer *Germany*

National Centre for Marine Research
D Papanikolaou *Greece*

Marine Research Institute
O S Astthorsson *Iceland*

Marine Institute
P Heffernan *Ireland*

Ente per le Nuove Tecnologie, l'Energia e l'Ambiente
V Artale *Italy*

Consiglio Nazionale delle Ricerche
S Vallerga *Italy*

Nederlandse Organisatie voor Wetenschappelijk Onderzoek / Koninklijke Nederlandse Akademie van Wetenschappen
J W de Leeuw *The Netherlands*

Havforskningsinstituttet
R Vaage *Norway*

Polska Akademia Nauk
J Dera *Poland*

Instituto de Cooperação Cientifica e Tecnológica Internacional
L Saldanha *Portugal (deceased Nov 97)*

Instituto Español de Oceanografia
E Lopez-Jamar *Spain*

Naturvetenskapliga forskningsrådet
L Rahm *Sweden*

Schweizerischer Nationalfonds zur Förderung der wissenschaftlichen Forschung
T Stocker *Switzerland*

TÜBITAK-The Scientific and Technical Research Council of Turkey
N Kemal Pak *Turkey*

NERC Centre for Coastal and Marine Sciences
RFC Mantura *United Kingdom*

Southampton Oceanography Centre
J Shepherd *United Kingdom*

ESF Scientific Secretary: **L d'Ozouville**
ESF Contact: **J Swift**
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Email: emaps@esf.org

EMaPS-Polar Board Members and their Delegates

British Antarctic Survey
R B Heywood (Chair to March 97)
United Kingdom

The Commission for Scientific Research in Greenland
J P Hart Hansen (Chair)
Denmark

Norsk Polarinstitutt
O Orheim (Vice-Chair) *Norway*

Ente per le Nuove Tecnologie, l'Energia e l'Ambiente
M Zucchelli (Vice-Chair) *Italy*

Fonds voor Wetenschappelijk Onderzoek-Vlaanderen
H Decleir *Belgium*

Fonds National de la Recherche Scientifique
R Souchez *Belgium*

Statens Naturvidenskabelige Forskningsråd / Det Kongelige Danske Videnskabernes Selskab
C Hammer *Denmark*

Suomen Akatemia / Finlands Akademi
P Mälkki *Finland*

Institut Français pour la Recherche et la Technologie Polaires
R Gendrin *France (to Nov 97)*
G Jugie *France*

Alfred-Wegener Institut für Polar- und Meeresforschung
M Tilzer *Germany (to Oct 97)*
J Thiede *Germany*

Rannsóknarráð Islands
H Björnsson *Iceland*

Consiglio Nazionale delle Ricerche
R Azzolini *Italy*

Nederlandse Organisatie voor Wetenschappelijk Onderzoek / Koninklijke Nederlandse Akademie van Wetenschappen
R Schorno *The Netherlands*

Norges Forskningsråd
A Schytte Blix *Norway*
Polska Akademia Nauk
S Rakusa-Suszczewski *Poland*
Russian Academy of Sciences
V Paúlenko *Russian Federation*
Consejo Superior de Investigaciones Cientificas
J R Vericad *Spain*
Kungliga Vetenskapsakademien
D Hedberg *Sweden (to Nov 97)*
Polarforskningssekretariatet
O Melander *Sweden*
Schweizerischer Nationalfonds zur Förderung der wissenschaftlichen Forschung
B Stauffer *Switzerland*
Natural Environment Research Council
D J Drewry *United Kingdom (to Dec 97)*

ESF Scientific Secretary: **C A Williams**
ESF Contact: **J Swift**
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EMaPS Review Panel

J Castellvi (Chair) *Spain*
Marine Board
E Naylor *United Kingdom*
G M Bozzo *Italy*
Polar Board
A Karlqvist *Sweden*
A Fowler *United States*
L d'Ozouville *EMaPS*
C A Williams *EMaPS*

Committee on Radio Astronomy Frequencies (CRAF)

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T A Th Spoelstra (Secretary) *The Netherlands*
R Bachiller *Spain*
A O Benz *Switzerland*
E Bervalds *Latvia*
G F Block *France*
P Cugnon *Belgium*
B Darchy *France*
B A Doubinski *Russia*
J Engelberg *Finland*
E Fürst *Germany*
D Morris *France*
M E Özel *Turkey*
J P V Poiares Baptista *The Netherlands*
J E B Ponsonby *United Kingdom*
W Reich *Germany (to Oct 97)*
K Ruf *Germany*
A A Sanches de Magalhaes *Portugal*
A Tlamicha *Czech Republic*
G Tomassetti *Italy*
J B Usowicz *Poland*
G Wannberg *Sweden*
A Winnberg *Sweden*

ESF Scientific Secretary: **H U Karow**
ESF Contact: **M Clifford**
Tel: +33 (0)3 88 76 71 07
Email: pesc@esf.org

European Space Science Committee (ESSC)

F Becker (Chair) *France (to Dec 97)*
J L Culhane (Chair) *United Kingdom*
W Alpers *Germany*
M Candidi *Italy*
A M Cruise *United Kingdom*
K Dose *Germany (to April 97)*
J J Favier *France*
A Giménez *Spain*
R J Gurney *United Kingdom*
G Haerendel *Germany*
N Kiehne *Germany*
J-C Legros *Belgium*
D Linnarsson *Sweden*
N Mandolesi *Italy*
P Masson *France*
G Mégie *France*
H Sünkel *Austria*
F W Taylor *United Kingdom*
G Védrenne *France*
A A Zdziarski *Poland*

ESF Scientific Secretary:
M Fratta (until June 97)
ESF Scientific Secretary:
H U Karow
ESF Contact: **C Werner**
Tel: +33 (0)3 88 76 71 28
Email: cwerner@esf.org

Executive Secretary:
J-C Worms

The ESSC meetings are also attended by representatives from the European Space Agency, the European Commission, the Space Research Institute of the Russian Academy of Sciences, the Space Studies Board of the US National Academy of Sciences, and COSPAR.

Nuclear Physics European Collaboration Committee (NuPECC)

S Galès (Chair) *France*
G E Körner (Secretary) *Germany*
J Äystö *Finland*
T Dossing *Denmark*
H Doubre / D Guerreau *France*
J Durell *United Kingdom*
A Fonseca *Portugal*
P Guichon *France (to Aug 97)*
M Huyse *Belgium*
J Jastrzebski *Poland*
H Leeb *Austria*
G Løvhøiden *Norway*
R Malfliet *The Netherlands*
J Martino *France*
G van Middelkoop *The Netherlands*
E Migneco *Italy*
G C Morrison *United Kingdom (to Dec 97)*
E Moya de Guerra *Spain*
E Osnes *Norway (to Dec 97)*
G Ricco *Italy*
B Schoch *Germany*
D Schwalm *Germany*
A Shotter *United Kingdom*
I Sick *Switzerland*
Ö Skeppstedt *Sweden*
J Vervier *Belgium (to Dec 97)*
A Wagner *Germany*
A Winther *Italy*

Observers
W von Oertzen *European Physical Society*
E Fernandez *European Committee for Future Accelerators*

ESF Scientific Secretary: **H U Karow**
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ESF member organisations

The ESF currently has 62 Member Organisations in 21 countries.

Austria

Fonds zur Förderung der wissenschaftlichen Forschung in Österreich
Austrian Science Research Fund
Weyringergasse 35 • A-1040 Wien

Österreichische Akademie der Wissenschaften
Austrian Academy of Sciences
Dr. Ignaz-Seipel Platz 2 • A-1010 Wien

Belgium

Fonds National de la Recherche Scientifique
National Fund for Scientific Research
5 rue d'Egmont • B-1000 Bruxelles

Fonds voor Wetenschappelijk Onderzoek-Vlaanderen
Fund for Scientific Research-Vlaanderen
5 Egmontstraat • B-1000 Brussel

Denmark

Det Kongelige Danske Videnskabernes Selskab
Royal Danish Academy of Sciences and Letters
H.C. Andersens Boulevard 35
DK-1553 København V

Statens Humanistiske Forskningsråd
Humanities Research Council
Statens Jordbrugs-og Veterinaer-videnskabelige Forskningsråd
Agricultural and Veterinary Science Research Council
Statens Sundhedsvidenskabelige Forskningsråd
Medical Research Council
Statens Naturvidenskabelige Forskningsråd
Natural Science Research Council
Statens Samfundsvidenskabelige Forskningsråd
Social Sciences Research Council
Statens Teknisk-Videnskabelige Forskningsråd
Technical Research Council

The administrations of the six research councils are assumed by:
Forskningsrådene
Bredgade 43 • DK-1260 København K

Finland

Suomen Akatemia/Finlands Akademi
Academy of Finland
PO Box 99 • Vilhonvuorenkatu 6
SF-00501 Helsinki

Suomen Tiedeakatemiain Valtuuskunta/ Delegationen för Vetenskapsakademierna i Finland
Delegation of the Finnish Academies of Science and Letters
Mariankatu 5 • SF-00170 Helsinki

France

Centre National de la Recherche Scientifique
National Centre for Scientific Research
3 rue Michel-Ange • F-75794 Paris Cedex 16

Commissariat à l'Energie Atomique Direction des Sciences de la Matière
Institute for Basic Research of the Atomic Energy Commission
Centre d'Etudes Nucléaires de Saclay
Orme des Merisiers
F-91191 Gif-sur-Yvette Cedex

Institut Français de Recherche pour l'Exploitation de la Mer
French Sea Research Institute
Technopolis 40
155, rue Jean-Jacques Rousseau
F-92138 Issy-les-Moulineaux Cedex

Institut National de la Santé et de la Recherche Médicale
National Institute for Health and Medical Research
101, rue de Tolbiac • F-75654 Paris Cedex 13

Germany

Deutsche Forschungsgemeinschaft
German Research Society
Kennedyallee 40 • D-53175 Bonn

Hermann von Helmholtz-Gemeinschaft Deutscher Forschungszentren
Association of National Research Centres
Postfach 20 14 48 / Ahrstrasse 45
D-53175 Bonn

Konferenz der deutschen Akademien der Wissenschaften
Conference of Academies of Arts and Sciences
Geschwister-Scholl-Strasse 2 • D-55131 Mainz

Max-Planck-Gesellschaft
Max Planck Society
Hofgartenstrasse 2 • Postfach 101062
D-80084 München

Gréece

National Hellenic Research Foundation
48 Vassileos Constantinou Avenue
GR-116 35 Athens

Hungary

Magyar Tudományos Akadémia
Hungarian Academy of Sciences
Roosevelt tér. 9 • H-1051 Budapest

Országos Tudományos Kutatási Alap
Hungarian Scientific Research Fund
Konyves Kalman Krt. 48-52 • H-1087 Budapest

Iceland

Rannsóknarráð Islands
The Research Council of Iceland
Laugavegi 13 • IS-101 Reykjavik

Ireland

FORBAIRT
Glasnevin • IRL-Dublin 9

Health Research Board
73 Lower Baggot Street • IRL-Dublin 2

Royal Irish Academy
19 Dawson Street • IRL-Dublin 2

Italy

Consiglio Nazionale delle Ricerche
National Research Council
Piazzale Aldo Moro 7 • I-00100 Roma

Istituto Nazionale per la Fisica della Materia
National Institute for the Physics of Matter
Corso Perrone 24 • I-16152 Genova

Istituto Nazionale di Fisica Nucleare
National Institute for Nuclear Physics
Piazza del Caprettari 70 • I-00186 Roma

The Netherlands

Koninklijke Nederlandse Akademie van Wetenschappen
Royal Netherlands Academy of Arts and Sciences
Het Trippenhuis • Kloveniersburgwal 27
Postbus 19121 • NL-1000 GC Amsterdam

Nederlandse Organisatie voor Wetenschappelijk Onderzoek
Netherlands Organisation for Scientific Research
Laan van Nieuw Oost Indië 131
Postbus 93138 • NL-2509 AC Den Haag

Norway

Det Norske Videnskaps-akademi
Norwegian Academy of Science and Letters
Drammensveien 78 • N-0271 Oslo

Norges Forskningsråd
The Research Council of Norway
Stensberggata 26 • P.O. Box 2700
St Hanshaugen • N-0131 Oslo

Poland

Polska Akademia Nauk
Polish Academy of Sciences
Palac Kultury i Nauki • PL-00-901 Warsaw

Portugal

Academia das Ciências de Lisboa
Lisbon Academy of Sciences
Rua da Academia das Ciências, 19
P-1200 Lisboa

Instituto de Cooperação Científica e Tecnológica Internacional
Institute for International Scientific and Technological Cooperation
Avenida Dom Carlos I • P-1200 Lisboa

Slovenia

Slovenska Akademija Znanosti in Umetnosti
Slovenian Academy of Sciences and Arts
Novi trg. 3 • SLO-61000 Ljubljana

Slovenska Znanstvena Fundacija
Slovenian Science Foundation
Stefanova 15 • SLO-61000 Ljubljana

Spain

Consejo Superior de Investigaciones Científicas
Council for Scientific Research
Calle Serrano 117 • E-28006 Madrid

Secretaría General del Plan Nacional de Investigación Científica y Desarollo Tecnológico
General Secretariat of the National Plan for Scientific Research and Technological Development
C/ Rosario Pino, 14-16 • E-28020 Madrid

Sweden

Forskningsrådsnämnden
Council for Planning and Coordination of Research
Regeringsgatan 56
Box 7101 • S-103 87 Stockholm

Humanistisk-Samhällsvetenskapliga Forskningsrådet
Humanities and Social Sciences Research Council
Regeringsgatan 56
Box 7120 • S-103 87 Stockholm

Kungliga Vetenskapsakademien
The Royal Academy of Sciences
Lilla Frescativägen 4a
Box 50005 • S-104 05 Stockholm

Kungliga Vitterhets-, Historie- och Antikvitetsakademien
Royal Academy of Letters, History and Antiquities
Box 5622 • Villagatan 3 • S-114 86 Stockholm

Medicinska Forskningsrådet
Medical Research Council
Box 7151 • Regeringsgatan 56
S-103 88 Stockholm

Naturvetenskapliga Forskningsrådet
Natural Science Research Council
Box 7142 • Regeringsgatan 56
S-103 87 Stockholm

Skogs- och Jordbrukets Forskningsråd
Swedish Council for Forestry and Agricultural Research
Odengatan 61 • Box 6488
S-113 82 Stockholm

Socialvetenskapliga Forskningsrådet
Swedish Council for Social Research
Tullgränd 4 • Box 2220 • S-103 15 Stockholm

Teknikvetenskapliga Forskningsrådet
Swedish Research Council for Engineering Sciences
Box 7136 • Regeringsgatan 56
S-103 87 Stockholm

Switzerland

Schweizerischer Nationalfonds zur Förderung der wissenschaftlichen Forschung
Swiss National Science Foundation
Wildhainweg 20
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Konferenz der schweizerischen wissenschaftlichen Akademien
Conference of the Swiss Scientific Academies
Hirschengraben 11
Postfach 2535 • CH-3001 Bern

Turkey

The Scientific and Technical Research Council of Turkey
Atatürk Bulvari 221 • Kavaklidere
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United Kingdom

Biotechnology and Biological Sciences Research Council
Central Office
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GB-Swindon SN2 1UH

The British Academy
10 Carlton House Terrace
GB-London SW1Y 5AH

Economic and Social Research Council
Polaris House
North Star Avenue • GB-Swindon SN2 1UJ

Engineering and Physical Sciences Research Council
Polaris House
North Star Avenue • GB-Swindon SN2 1ET

Medical Research Council
20 Park Crescent • GB-London W1N 4AL

Natural Environment Research Council
Polaris House
North Star Avenue • GB-Swindon SN2 1EU

Particle Physics and Astronomy Research Council
Polaris House
North Star Avenue • GB-Swindon SN2 1SZ

The Royal Society
6 Carlton House Terrace
GB-London SW1Y 5AG

Finance and accounts

In order to provide the latest available information on ESF Finances, the 1997 audited Accounts are published in this Report. These accounts will be presented to and discussed by the Finance Committee at its April meeting, the Executive Council at its May meeting and the Assembly in November 1998. Any modification requested by the above mentioned bodies will be clearly identified in next year's Report.

The running of the ESF and its activities is funded by contributions from ESF Member Organisations.

The GENERAL BUDGET is used to finance the running of the ESF Secretariat (staff, administrative costs, statutory meetings, equipment) and the general scientific activity (meetings of the Standing Committees and of the working groups, cost of various workshops - especially those needed in the preparation of ESF Scientific Programmes; publications).

Table 1 presents the Inflow and Use of Funds in 1997. The Balance Sheet on 31 December 1997 and 1996 is given in Table 2.

In November 1997, the Assembly approved the 1998 General Budget, amounting to 34 605 kFF. It is itemised in Table 3.

From 1998 onwards, the General Budget includes the Network Account as one of the headings of expenditure.

The NETWORK ACCOUNT is used for the co-ordination of Network operations and for the running of Phase 1 Networks.

Table 4 presents the Inflow and Use of Funds in 1997. The Balance Sheet on 31 December 1997 and 1996 is presented in Table 5.

All ESF Member Organisations contribute to the General Budget according to a scale of contributions set out according to the statute (Table 6).

In addition to the activities funded from the General Budget, other activities are funded *à la carte* only by those Member Organisations which are interested in participating. These activities are named Scientific Programmes (Additional Activities and Associated Programmes).
The ESF also runs some 'special budgets' (funds received from various non-ESF Organisations, 'workshop funds' established by Member Organisations and run by the ESF, etc). Amongst these special budgets are the accounts for the Programme of European Research Conferences (EURESCO) and for the European Boards for Marine and Polar Science.

In order to provide an overview of all the funds managed by the ESF, Consolidated Accounts are presented in Table 7, and the Consolidated Balance Sheet on 31 December 1997 in Table 8.

Table 1: **1997 General Budget (in FF)**

Use of Funds		Inflow of Funds		
1. Actual expenditure*	28 946 263.23	**1. Brought forward from 1996**		3 950 111.10
Employment costs	18 497 759.46	1.1• 1996 excess of Inflow of Funds over Use of Funds	450 111.10	
Running expenses	2 654 399.91	1.2• 1996 interest committed to reduce the 1997 call	3 500 000.00	
Scientific and statutory meetings	5 866 927.08			
Publications and publicity	1 176 251.87			
Equipment and maintenance work	585 672.22			
Miscellaneous	165 252.69			
2. Carry forward to 1998 (committed to reduce the 1998 Call)	1 980 000.00	**2. Contributions from Member Organisations**		24 964 000.00
		2.1• for the General Budget	24 064 000.00	
		2.2• for the provision for EURESCO	900 000.00	
3. Transfer to the Reserve Fund	38 069.41	**3. Transfers for management costs**		2 748 790.00
4. Transfer to the provision for EURESCO	900 000.00	**4. 1997 Bank Interest**		1 567 958.31
5. Provision for works	64 327.78	**5. Miscellaneous income**		21 843.65
6. Provision for doubtful debts	485 395.81			
Total Use of Funds	32 414 056.23			
Excess of Inflow of Funds over Use of Funds	838 646.83			
	33 252 703.06	**Total Inflow of Funds**		**33 252 703.06**

* Including office costs (other than staff) incurred for EURESCO

Table 2: **General Budget: Balance sheet on 31 December 1997 and 1996 (in FF)**

Assets	1997	1996	Liabilities	1997	1996
Fixed Assets (furniture and office equipment)	1 061 223.03	1 157 435.91	**Capital Endowment**	1 061 223.03	1 157 435.91
			Reserve Fund	3 842 510.87	3 804 441.46
Current Assets			**Reserve Fund / EURESCO**	1 800 000.00	900 000.00
• Contributions expected from Member Organisations	1 821 933.57	1 303 286.58	**Provision for Works**	64 327.78	—
• Accounts receivable	14 830.00	111 350.00	**Provision for doubtful debts**	947 907.45	462 511.64
• Paid in advance	31 596.58	50 586.60			
• Securities	32 146 364.24	31 168 360.20	**Current Liabilities**		
• Cash in hand	761.35	235.12	• Accounts payable	2 155 452.79	2 876 623.43
			• Clearing account	61 960.78	24 877.72
			• Commitment for SCSS Grants	238 212.07	199 885.00
			• Collected or received in advance	1 980 000.00	3 500 000.00
			• Cash owed to the bank*	21 696 815.87	20 092 672.07
			• Interest received after respectively 15/10/97 and 14/10/96	389 651.30	322 696.08
			Excess of Inflow of Funds over Use of Funds	838 646.83	450 111.10
	35 076 708.77	**33 791 254.41**		**35 076 708.77**	**33 791 254.41**

* The cash owed to the bank implies no interest payments to the bank, because the bank takes into account the positive overall balance for all ESF accounts.

Table 3: **General Budget for 1997 and 1998 (in kFF)**

	1997	1998
Employment costs	18 965	19 405
Running expenses	2 929	2 750
Scientific and statutory meetings	6 220	6 310
Scientific Networks	–	3 980
Publications and publicity	1 400	1 400
Equipment and maintenance work	650	600
Others (incl. Audit costs)	160	160
	30 324	**34 605**

Table 4: **Network Account: Inflow and Use of Funds 1997 (in FF)**

Use of Funds		
Expenditure for 23 Phase 1 Networks		3 809 812.94
Exploratory workshops		111 688.26
Management and administration		891 758.44
• 1997 ESF Management charges	750 000.00	
• Publications, bank charges and miscellaneous	18 994.70	
• Network Committee meetings	122 763.74	
Provision for doubtful debts		97 124.19
Total Use of Funds		4 910 383.83
Excess of Inflow over Use of Funds		841 689.38
		5 752 073.21

Inflow of Funds	
1997 Contributions from Member Organisations	4 820 000.00
Carried over from previous year	871 000.60
1997 bank interest	61 072.61
Total Inflow of Funds	**5 752 073.21**

Table 5: **Network Account: Balance Sheet on 31 December 1997 and 1996 (in FF)**

Assets	1997	1996
Current Assets		
• Contributions expected from Member Organisations	423 565.46	265 103.96
• Accounts receivable	16 579.86	—
• Paid in advance	11 929.77	136 938.86
• Securities	—	994 665.91
• Cash in bank	825 061.44	8 243.21
	1 277 136.53	**1 404 951.94**

Liabilities	1997	1996
Current Liabilities		
• Accounts payable	247 576.40	443 204.78
• Provision for doubtful debts	187 870.75	90 746.56
Excess of Inflow over Use of Funds	841 689.38	871 000.60
	1 277 136.53	**1 404 951.94**

Table 6: **Scale of Contributions**
(Based on net national income at market prices)

	1992	1993/94	1995	1996/97/98
	%	%	%	%
Austria	2.24	2.27	2.29	2.33
Belgium	2.83	2.87	2.69	2.75
Denmark	1.95	1.98	1.81	1.78
Finland	1.51	1.53	1.51	1.25
France	16.94	17.17	16.63	16.37
Germany	21.37	21.66	22.91	23.54
Greece	0.95	0.96	0.98	0.99
Hungary	0.50	0.51	0.46	0.46
Iceland	0.10	0.10	0.08	0.08
Ireland	0.51	0.52	0.55	0.56
Italy	14.74	14.94	15.03	14.70
The Netherlands	4.22	4.28	4.10	4.10
Norway	1.56	1.58	1.39	1.34
Poland	1.48	1.50	1.14	1.17
Portugal	0.61	0.62	0.65	0.67
Slovenia	—	—	—	0.21
Spain	5.74	5.82	6.16	6.34
Sweden	3.11	3.15	3.16	2.84
Switzerland	3.54	3.59	3.43	3.35
Turkey	1.14	1.16	1.22	1.25
United Kingdom	13.60	13.79	13.81	13.92
Yugoslavia	1.36	—	—	—
	100.00	**100.00**	**100.00**	**100.00**

- Figures for 1992 and 1993/1994 are based on net national incomes for the years 1986, 1987 and 1988.
- Figures for 1995 are based on net national incomes for the years 1990, 1991 and 1992.
- Before 1995 income figures used for Germany were for the Federal Republic. Since 1995 they are for the reunified Germany.
- Figures for 1996, 1997 and 1998 are based on net national incomes for the years 1991, 1992 and 1993.

Table 7: **1997 Consolidated Inflow and Use of Funds (in FF)**

	Use of Funds				
	Basic Activities	Scientific Programmes & Assoc. Committees	Special Budgets	Excess of Inflow over use of Funds	Total
General Budget	32 414 056.23			838 646.83	33 252 703.0
Networks	4 910 383.83			841 689.38	5 752 073.2
AA Airborne Polar Experiment		832 831.50		21 211.76	854 043.2
AA Applied Mathematics for Industrial Flow Problems		555 017.82		195 520.18	750 538.0
AA Artificial Biosensing Interfaces		834 318.97		38 930.08	873 249.0
AA Asian Studies Workshops		1 377 508.73		382 383.99	1 759 892.7
AA Biophysics of Photosynthesis		1 172 678.21		42 986.04	1 215 664.2
AA Blueprint for a European Social Survey		236 862.49		642 708.51	879 571.0
AA Chemistry of Metals in Biological Systems		439 417.95		380 263.06	819 681.0
AA Concepts and Symbols of the 18th Century in Europe		804 596.81		1 065 339.94	1 869 936.7
AA Control of Complex Systems		869 661.00		581 883.72	1 451 544.7
AA Database of Quaternary Mammals of Europe		27 022.63		50 000.00	77 022.6
AA Environment and Health		876 577.78		225 637.29	1 102 215.0
AA European Ice Sheet Modelling Initiative		709 122.54		802 592.23	1 511 714.7
AA European Lake Drilling Programme		149 873.71		278 682.64	428 556.3
AA European Management and Organisations in Transition		763 742.89		125 461.95	889 204.8
AA European Project for Ice Coring in Antarctica		279 779.71		98 854.49	378 634.2
AA European Volcanological Project		321 873.15			321 873.1
AA Europrobe		1 318 163.27		(49 052.97)	1 269 110.3
AA The Evolution of Chemistry in Europe 1789-1939		617 769.90		23.65	617 793.5
AA Geographic Information Systems: data integration and data base design		1 354 249.81		382 552.71	1 736 802.5
AA Highly Structured Stochastic Problems		414 316.86		217 565.14	631 882.0
AA Immunogenetics of Allergy: towards prevention and care		821 221.87		50 778.13	872 000.0
AA Individual and Society in the Mediterranean Muslim World		1 121 935.71		433 439.22	1 555 374.9
AA Language Typology		735 420.68		242 790.17	978 210.8
AA Learning in Humans and Machines		905 979.04		779 881.26	1 685 860.3
AA Kinetic Processes in Minerals and Ceramics		200 476.37		76 512.06	276 988.4
AA Mathematical Treatment of Free Boundary Problems		889 126.27		300 287.18	1 189 413.4
AA Plant Adaptation		391 633.84		24 576.16	416 210.0
AA Population Biology		870 787.28		91 674.26	962 461.5
AA Process Integration in Biochemical Engineering		425 704.92		475 868.85	901 573.7
AA Quaternary Environment of the Eurasian North		198 609.20		349 879.48	548 488.6
AA Relativistic Effects in Heavy Element Chemistry and Physics		690 024.08		212 098.04	902 122.1
AA Tackling Environmental Resource Management		1 185 003.76		901 843.82	2 086 847.5
AA The Transformation of the Roman World		1 424 848.69		413 040.37	1 837 889.0
AA Transport Processes in the Atmosphere and Oceans		732 857.38		152 677.13	885 534.5
AA Tropical Canopy Research		329 390.70		700 756.32	1 030 147.0
AA Vapour-phase Synthesis and Processing of Nano-particle Materials		986 762.33		129 781.82	1 116 544.1
AP Developmental Biology		776 643.36		313 539.98	1 090 183.3
AP European Neuroscience Programme		149 698.20		322 829.62	472 527.8
AP ESF Consortium for Ocean Drilling		759 226.39		114 908.08	874 134.4
AP Programme of Fellowships in Toxicology		284 275.12			284 275.1
AP Molecular Neurobiology of Mental Illness				178 129.31	178 129.3
AC NuPECC		885 352.56		311 603.37	1 196 955.9
AC Space Science Committee		694 108.18		35 161.11	729 269.2
General Budget for Scientific Programmes		2 835 645.42		205 307.04	3 040 952.4
SB Asian Studies Fellowships			3 500 706.22	136 367.55	3 637 073.7
SB CEC Popularising European Science			66 296.59	9 567.76	75 864.3
SB EERO			367 970.03	41 486.78	409 456.8
SB EURESCO			15 132 039.91	667 654.32	15 799 694.2
SB European Marine and Polar Science			2 196 353.47	397 657.33	2 594 010.8
SB British Academy				23 816.84	23 816.8
SB CNR Special Account			80 151.18	11 269.05	91 420.2
SB ESRC				102 860.54	102 860.5
SB NWO Special Fund				8 939.17	8 939.1
SB GOA				65.30	65.3
Earlier Contributions written-off					
Total	**37 324 440.06**	**32 250 117.08**	**21 343 517.40**	**15 380 928.04**	**106 299 002.5**

AA = Additional Activity AC = Associated Committee SB = Special Budget AP = Associated Programme

Inflow of Funds

	Basic Activities	Scientific Programmes & Assoc. Committees	Special Budgets	Carried over from 1996	Total*
General Budget	29 302 591.96			3 950 111.10	33 252 703.06
Networks	4 881 072.61			871 000.60	5 752 073.21
AA Airborne Polar Experiment		715 000.00		139 043.26	854 043.26
AA Applied Mathematics for Industrial Flow Problems		750 538.00			750 538.00
AA Artificial Biosensing Interfaces		735 000.00		138 249.05	873 249.05
AA Asian Studies Workshops		1 311 620.00		448 272.72	1 759 892.72
AA Biophysics of Photosynthesis		900 000.00		315 664.25	1 215 664.25
AA Blueprint for a European Social Survey		879 571.00			879 571.00
AA Chemistry of Metals in Biological Systems		575 000.00		244 681.01	819 681.01
AA Concepts and Symbols of the 18th Century in Europe		955 000.00		914 936.75	1 869 936.75
AA Control of Complex Systems		890 772.94		560 771.78	1 451 544.72
AA Database of Quaternary Mammals of Europe		145.31		76 877.32	77 022.63
AA Environment and Health		864 998.00		237 217.07	1 102 215.07
AA European Ice Sheet Modelling Initiative		635 000.00		876 714.77	1 511 714.77
AA European Lake Drilling Programme		350 000.00		78 556.35	428 556.35
AA European Management and Organisations in Transition		357 500.00		531 704.84	889 204.84
AA European Project for Ice Coring in Antarctica		310 000.00		68 634.20	378 634.20
AA European Volcanological Project				321 873.15	321 873.15
AA Europrobe		1 350 000.00		(80 889.70)	1 269 110.30
AA The Evolution of Chemistry in Europe 1789-1939				617 793.55	617 793.55
AA Geographic Information Systems: data integration and data base design				1 796 802.52	1 796 802.52
AA Highly Structured Stochastic Problems		631 882.00			631 882.00
AA Immunogenetics of Allergy: towards prevention and care		872 000.00			872 000.00
AA Individual and Society in the Mediterranean Muslim World		1 132 698.00		422 676.93	1 555 374.93
AA Language Typology				978 210.85	978 210.85
AA Learning in Humans and Machines		920 000.00		765 860.30	1 685 860.30
AA Kinetic Processes in Minerals and Ceramics				276 988.43	276 988.43
AA Mathematical Treatment of Free Boundary Problems		985 000.00		204 413.45	1 189 413.45
AA Plant Adaptation		416 210.00			416 210.00
AA Population Biology		848 240.28		114 221.26	962 461.54
AA Process Integration in Biochemical Engineering		480 000.00		421 573.77	901 573.77
AA Quaternary Environment of the Eurasian North		500 000.00		48 488.68	548 488.68
AA Relativistic Effects in Heavy Element Chemistry and Physics		700 000.00		202 122.12	902 122.12
AA Tackling Environmental Resource Management				2 086 847.58	2 086 847.58
AA The Transformation of the Roman World		1 062 000.00		855 889.06	1 917 889.06
AA Transport Processes in the Atmosphere and Oceans		640 000.00		245 534.51	885 534.51
AA Tropical Canopy Research		470 000.00		560 147.02	1 030 147.02
AA Vapour-phase Synthesis and Processing of Nano-particle Materials				1 116 544.15	1 116 544.15
AP Developmental Biology				1 090 183.34	1 090 183.34
AP European Neuroscience Programme		10 686.59		613 814.90	624 501.49
AP ESF Consortium for Ocean Drilling		693 017.27		181 117.20	874 134.47
AP Programme of Fellowships in Toxicology				359 275.12	359 275.12
AP Molecular Neurobiology of Mental Illness				178 129.31	178 129.31
AC NuPECC		735 405.68		461 550.25	1 196 955.93
AC Space Science Committee		537 500.00		191 769.29	729 269.29
General Budget for Scientific Programmes		948 149.54		2 092 802.92	3 040 952.46
SB Asian Studies Fellowships			343 040.07	3 294 033.70	3 637 073.77
SB CEC Popularising European Science			75 864.35		75 864.35
SB EERO			409 456.81		409 456.81
SB EURESCO			15 741 979.27	57 714.96	15 799 694.23
SB European Marine and Polar Science			2 259 422.18	387 208.21	2 646 630.39
SB British Academy				23 816.84	23 816.84
SB CNR Special Account				91 420.23	91 420.23
SB ESRC				102 860.54	102 860.54
SB NWO Special Fund				8 939.17	8 939.17
SB GOA			1 509.72	(1 444.42)	65.30
Earlier Contributions written-off				(419 593.26)	(419 593.26)
Total	**34 183 664.57**	**24 162 934.61**	**18 831 272.40**	**29 121 131.00**	**106 299 002.58**

hen, on a same line, figures in the last column (Total inflow of funds) are higher than figures in the last column on the opposite page (Total use of funds)
is denotes that earlier contributions have been written off (see last line)

Table 8: **Consolidated Balance Sheet on 31.12.1997 [in bold] and 31.12. 1996 (in FF)**

Assets	Basic Activities	Scientific Programmes & Assoc. Committees	Special Budgets	Total
Furniture and office equipment	**1 061 223.03** 1 157 435.91	**—** —	**—** —	**1 061 223.03** 1 157 435.91
Contributions expected from Member Organisations	**2 245 499.03** 1 568 390.54	**2 741 040.00** 3 402 673.67	**552 200.00** 70 000.00	**5 538 739.03** 5 041 064.21
Payments expected from the European Union	**—** —	**—** —	**2 486 632.41** 4 841 802.67	**2 486 632.41** 4 841 802.67
Accounts receivable	**31 409.86** 111 350.00	**37 654.66** 234 555.71	**134 195.86** —	**203 260.38** 345 905.71
Paid in advance	**43 526.35** 187 525.46	**228 068.89** 335 240.92	**209 152.24** 118 276.45	**480 747.48** 641 042.83
Clearing Account	**—** —	**8 086.33** 9 178.00	**122,72** 8 676.28	**8 209.05** 17 854.28
Securities	**32 146 364.24** 32 163 026.11	**326 340.77** 906 948.49	**2 230 922.26** 3 307 552.22	**34 703 627.27** 36 377 526.82
Cash in bank	**825 061.44** 8 243.21	**17 141 598.80** 17 935 038.75	**5 090 088.99** 980 641.91	**23 056 749.23** 18 923 923.87
Cash in hand	**761.35** 235.12	**—** —	**—** —	**761.35** 235.12
Excess of Use of Funds over Inflow of Funds	**—** —	**49 052.97** 80 889.70	**—** 1 444.42	**49 052.97** 82 334.12
Total	**36 353 845.30** 35 196 206.35	**20 531 842.42** 22 904 525.24	**10 703 314.48** 9 328 393.95	**67 589 002.20** 67 429 125.54

Liabilities	Basic Activities	Scientific Programmes & Assoc. Committees	Special Budgets	Total
Capital Endowment	**1 061 223.03** 1 157 435.91	— —	— —	**1 061 223.03** 1 157 435.91
Reserve Fund	**3 842 510.87** 3 804 441.46	— —	— —	**3 842 510.87** 3 804 441.46
Provision for EURESCO	**1 800 000.00** 900 000.00	— —	— —	**1 800 000.00** 900 000.00
Provision for Works	**64 327.78** —	— —	— —	**64 327.78** —
Provision for doubtful debt	**1 135 778.20** 553 258.20	**615 00.00** —	— —	**1 750 778.20** 553 258.20
Accounts payable	**2 403 029.19** 3 319 828.21	**2 480 686.31** 1 852 687.13	**929 401.41** 558 227.25	**5 813 116.91** 5 730 742.59
Collected or received in advance	**2 369 651.30** 3 822 696.08	**460 000.00** 66 700.00	**5 697 104.72** 4 663 068.29	**8 526 756.02** 8 552 464.37
Clearing Account	**61 960.78** 24 877.72	**228 561.34** 109 648.99	**9 000.00** —	**299 522.12** 134 526.71
Provision for commitments	**238 212.07** 199 885.00	**4 370 167.19** 4 811 148.61	**2 265 509.55** 3 051 371.09	**6 873 888.81** 8 062 404.70
Cash owed to the bank	**21 696 815.87** 20 092 672.07	**27 467.42** 39 536.09	**402 614.16** 141 104.76	**22 126 897.45** 20 273 312.92
Excess of Inflow of Funds over Use of Funds	**1 680 336.21** 1 321 111.70	**12 349 960.16** 16 024 804.42	**1 399 684.64** 914 622.56	**15 429 981.01** 18 260 538.68
Total	**36 353 845.30** 35 196 206.35	**20 531 842.42** 22 904 525.24	**10 703 314.48** 9 328 393.95	**67 589 002.20** 67 429 125.54

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